



MUCH interest has been excited by the conviction of a Bermondsey druggist under the Adulteration Act, for selling citrate of magnesia. The subject will be found fully treated in this number. The recent evening meeting of the Pharmaceutical Society was chiefly given up to a discussion of the subject. Many new names were suggested, but nothing definite resulted. We are informed that Mr. Bishop, who first introduced the article and the name, has submitted the question to most eminent counsel, and that he will shortly advise the trade respecting the opinion given.

At the Pharmaceutical Council meeting a considerable falling off of students in the School of Pharmacy was reported. An attempt to improve the style of conducting the Preliminary Examinations, by reducing the number of centres, which seems to us most desirable, was postponed for the present by the opposition which it met with from Mr. Schacht and a few others.

We call special attention to the announcement made in our advertisement pages by the National Chamber of Trade of a meeting of chemists on Wednesday evening next, at 8 o'clock, under the presidency of Mr. Haselden, to consider the Adulteration Act.

Our Portrait Gallery contains a likeness of Mr. Sydney Plowman, the student, who won such distinguished honours at the end of last session.

Among the articles which appear in this issue will be found a sketch of the history and present position of the Atomic Theory, by W. H. Walenn, F.C.S., and a curious account of "Chinese Physic Teas," by P. L. Simmonds. We also give an engraving and an account of Messrs. Goodall, Backhouse and Co.'s new premises at Leeds. Chemists who, amid their legal difficulties, can spare a smile, may turn to our special report of cases under the Adulteration Act.

We report the opening of sessions of several of the provincial associations. The gny pharmacists of Sheffield concluded a scientific soiree by an impromptu ball.

The Manchester Chemists' Association has opened the winter session with a *soirée* and exhibition, got up with considerable spirit and passing off very successfully. The members however got into hot water in their domestic circles about this evening's entertainment: first, by professing to exclude ladies, and secondly, and more seriously, when the latter read in a local paper next morning that "Professor Atfield's gems made the hearts of the lady spectators burn with envy."

Dr. Cook read a paper before the Liverpool Chemists' Association somewhat sharply criticising the practice of some chemists of buying other than the best drugs or chemicals. He urged the formation of a sort of solemn league and covenant among honourable chemists, who would bind themselves to supply nothing but medicines of the highest degree of purity. The Liverpool chemists condemned Dr. Cook's proposal as Utopian.

The death of Professor Calvert is announced at the age of 64. In our next issue we hope to publish a more extended notice of this eminent chemist, and we shall take the opportunity of presenting his portrait.

We also record with much regret the somewhat sudden death of Mr. George Dymond, of the firm of Southall, Son, and Dymond, of Birmingham. Mr. Dymond has rendered good service to the trade both as a Pharmaceutical Councillor and as president of the Midland Chemists' Association. He died at the early age of 44. A number of the local chemists attended his funeral.

We have made an arrangement with the publishers of the *Pharmaceutische Central-Anzeiger*, of Neustadt-Eberswalde, Prussia, whereby we are prepared to arrange for advertisements in that publication. If any English house is desirous of introducing goods into Germany we would advise them to employ this medium, which has an immense free circulation throughout the German and Austrian empires, Switzerland, etc. (See Advertisement.)

We have received a letter from Dr. Phœbus, of Giessen, who, it will be remembered, is at the head of an International Committee which has charged itself with the production of a European Pharmacopœia. Dr. Phœbus informs us that although the Vienna Conference, which had been arranged for, did not take place, four conferences of several members had been held in various towns; and that the enterprise is proceeding slowly but successfully.

We regret that in our last number our translator should have made our German correspondent announce that the *Pharmaceutische Zeitung* of Bunzlau was deposed from its position as organ of the "Deutsche Apotheker Verein." The passage which gave rise to that remark was to the effect that the words "Organ of the D.A.V." on the head of the journal will be omitted in future, as such an expression indicates a dependence of the journal on the Association.

Our Berlin correspondent gives us some interesting sketches of his experience as an army pharmacist during the late war.

The Secretary of the Pharmaceutical Conference has sent a letter to the various medical corporations and the leading prescribers inviting their attention to the resolutions as to extreme doses carried at Bradford.

A curiously interesting letter from Mr. Rimmel, on "Disinfection by means of Aromatics," will be found in our correspondence columns.

Our analytical exercise of September has produced a curious result. Ten out of fourteen students have failed to get in the race at all.

Some official figures recently published show that during the financial year, 1872-3 (ending March, 31st, 1873) stamp duty was paid on 12,731,753 packets, boxes, etc., of patent medicines. The number is considerably above a million over that of the preceding year. The stamp duty amounted to £95,812 19s. 7½d., while the Excise duty on vendors reached £7,283 15s.

The remarkable agitation in all the money markets of the world has completely paralyzed speculation. Nevertheless, trade in drugs and chemicals has been fairly satisfactory. The "feature" of the month has been the tremendous advance of quicksilver. Five pounds per bottle has been put on the metal in one month, and the chemical world awaits in terror the next ukase from Copthall Court.

Mr. Alderman Lusk, the new Lord Mayor of London, at a public meeting of his constituents, the electors of Finsbury, held on October 19th, at Myddelton Hall, was asked by an elector if he was in favour of allowing Civil servants to compete with regular trades by keeping co-operative stores, he replied that Civil servants should devote their time to the duties of their offices, and if not paid sufficiently their pay should be increased; but they should not be allowed to compete with tax-paying shopkeepers. The reply was received with considerable applause.

The Civil Service Supply Association has published its report up to August 31st, 1872. The half-year's sales amounted to £359,627 5s. 4d., and the total gross profit amounted to £36,137 9s. 5½d. The working expenses amounted to £27,301 0s. 8½d., being a shade over 7½ per cent. on the total sales. The net balance, after allowing for depreciation, etc., was £4,268 16s. 6d. The rent of the new premises of this association in Queen Victoria-street, is £2,750. They are taken on a lease of twenty-one years, which shows some confidence on the part of the committee.

SYDNEY PLOWMAN.

OLD warriors in the rank of pharmacy, we may hope, will bear with us patiently if we give the place of honour in our pages this month to a young, but not unworthy, hero. It has already been our duty to record the brilliant position achieved in the Pharmaceutical Society's examinations by Mr. Sydney Plowman. We present a portrait of that gentleman partly that we may signalise his remarkable performance, and partly that we may thus pay a genuine compliment of respect to the small but honourable class of young men who not only at Bloomsbury but all over the country are striving honestly after excellence. On them will soon devolve the duty of maintaining the credit of British pharmacy, and if we can in any degree awaken among them that spirit of patient resolution, too rare perhaps, but still as ever the characteristic of the Anglo-Saxon race, we shall not, as the time-honoured old phrase has it, have written this sketch in vain.

Mr. Plowman was born at Boston, in Lincolnshire, in November, 1850; educated at the Grammar School of that town, under the Rev. Dr. Pattenden, the head master. At the age of 13, three years under the prescribed limit of age, Mr. Plowman had his first regular experience of public examinations in one of the "Cambridge Locals," and as our readers will no doubt anticipate came out with honours. This was something more than creditable for a boy scarcely out of pinafores, but the youngster had no notion of resting on his laurels. He stayed at the Grammar School till he was 16, and was then apprenticed to Mr. W. Lock, of Boston, a chemist and druggist, who we believe has since retired from business. The class of trade which lay open before him here was of the "pitch, tar, and verdigrease" character. It was one of those establishments where a prescription was something to be gazed on with respect and ruminated about. Oilcake and petroleum were big items in the materia medica, sheep ointment and horseballs the chief features of the pharmaceutical practice. We have no record, but equally we have no doubt, that Mr. Plowman made his physic mass with as much care as he would now prepare terechloride of gold. That he studied hard during his period of apprenticeship is evidenced by the fact that in March, 1872, he came up to London and passed his "Minor,"

and four months after made another trip, and took the first place in the competition for the Junior Bell Scholarship. This success transferred him from the country shop to the metropolitan laboratory. How he used the opportunity thus afforded is told by results. In June, 1873, he passed the "Major" with honours, and in July at the competitive examinations of the various classes he carried off the Silver Medal for Chemistry and Pharmacy, making 87 marks out of a possible total of 100; the Silver Medal for Botany and Materia Medica, with 115 marks out of the maximum of 125; and the Silver Medal for Practical Chemistry, scoring in this competition 86 per cent. of perfection. He added to these trophies the Pereira Medal, which can be competed for only by those candidates for the Major examination who during the year have passed with honours, and which is justly regarded as the chief distinction the Pharmaceutical Council can award, and the Senior Bell Scholarship, which retains him in the Laboratory for another year.

The reader is picturing to himself a youthful student "sicklied o'er with the pale cast of thought," prostrate and broken down by these exertions. This, however, we are pleased to add, was not in the programme. As a little change after his six scientific victories, Mr. Plowman went down to Lincolnshire, and carried off cups both at Boston and Sleaford in some athletic competitions. The sympathetic reader may judge of his prostrate condition. We heartily wish Mr. Plowman success in the career he has begun so well, and when he does meet with the novel experience of disappointments, which in some form or another are sure to come, we hope he will bear them with the same quiet modesty which has marked his demeanour under success.

To aspirants after pharmaceutical honours it would be an easy thing to say, "Go and do likewise." We shall not say this however. *Non omnia possumus omnes*. It is not given to every man to visit Corinth. Most of us have to be content with but a very partial success, strive we never so faithfully. But each can do his best; and, as old Hubert in "Woodstock," used to say, "No man can do more." Let our young readers never tire of following this old-fashioned way of doing things, so well exemplified by Mr. Plowman, and they will find the poet's words true, that "if they're truly brave, they'll make the hardest circumstance a helper or a slave."

CHEMICAL SOCIETY.

PROCEEDINGS of the Chemical Society, Thursday, 6th November, 1873; Dr. Odling, F.R.S., etc., President, in the chair. After the ordinary business of the Society was finished, the President delivered a short address, congratulating the Fellows on taking possession of their new rooms in Burlington House. A paper was then read by Mr. Davis Howard, "On the Optical Properties of some Modifications of the Cinchona Alkaloids," being an elaborate investigation of the variations in the rotatory power of this class of bodies when examined by the polarimeter.

The other communications were, a "Preliminary Notice on the Oils of Wormwood and Citronella," by C. R. A. Wright, D.Sc.; "On the Estimation of Nitrates in Potable Waters," by W. F. Donkin, B.A.; and a "Note on the Action of Iodine Trichloride upon Carbon Disulphide," by Mr. J. B. Hannay. The meeting finally adjourned until Thursday, 20th November.

THE CHEMIST AND DRUGGIST PORTRAIT GALLERY.

IV.



*Yours truly
Sydney Rowman*



GERMANY.

(FROM OUR OWN CORRESPONDENT.)

GERMAN MILITARY PHARMACY.

BERLIN, Oct. 28th 1873.

IN a former article (September, 1873) we traced the education of the pharmacist up to his last diploma, and we left him at the point when he must give his year's service in the army. This, as a pharmacist, he can only do after passing the State examination. It is not essential that he should wear uniform during this year; formerly it was not even necessary to possess one. The first step is to present a notification to the chief surgeon of the army corps of the particular garrison, receive a ratification, and afterwards be sworn before a staff surgeon, inspector and lieutenant. After these processes service commences. In the hospital is a dispensary and a very limited pharmacy. After the chief staff surgeon has visited his patients about ten a.m., the duties of the military apothecary commence, the prescriptions are entered into books which are taken to the dispensary where the medicines are prepared; the recipes are written upon regular forms and condensed according to principles of simplicity and economy. They are written in Latin, and the weights both in figures and words; the whole service of the hospital is strictly according to rule. The green book, a portly volume, contains all the regulations, and is the fear of all who have not during years of service become inured to the tyrannical system. Any one in the hospital who does not adhere to every rule in the green book very soon receives warning or punishment. After the evening round, when generally very little is prescribed, the military apothecary has again to prepare the prescriptions; after morning and evening rounds he is free, and employs his leisure sometimes at small hospitals, but generally at the city pharmacy. The military pharmacists are just now in many towns very welcome in consequence of the dearth of assistants, although they can only give a few hours a day. During the late war the War Office refused the requests of the German apothecaries, so that there became such a scarcity of apothecaries in the hospitals that in the most important garrison places, such as Berlin, where formerly one had to give in one's name years before getting an appointment, no apothecaries were to be had for the hospitals, and the service had to be rendered *volens* by the surgeons themselves, the apothecaries preferring field military service. Some discontent exists as to the honours of this service as the surgeon, but not the apothecary, after his term of service receives the officer's marks, which, in fact, are given him at his entrance, although both have equally to pass the State examination. In the larger hospitals of the provincial capitals two or three apothecaries are required, who have charge of large dépôts of medicines with which they supply the smaller hospitals. Everything is done according to system. At the end of every quarter all the orders are added up, the weight of each remedy extracted and deducted from the original stock, after which the inventory is made; subsequently, the chief staff surgeon examines the accounts. Exactly the same rule of the green book is observed in war; the whole dispensary is carried in two remarkably well-arranged chest wagons with padded compartments for the bottles, etc., and others at the side for bandages and surgical instruments. A large scale, capable of being taken to pieces, a number of smaller scales, all sorts of vessels, etc. Three larger wagons contain all the beds, etc., to establishing a hospital in any empty building. Finally, there is an additional package wagon which contains the money chest. In the late war that was seldom found sufficient, four others were necessary, partly for the quicker transport of men and to take up things found on the way, as for example,

oats, tents, and blankets out of the camp of Chalons, sugar and cognac out of a convoy of provisions near Selan, originally destined "Pour l'armée du Rhin." Each army corps has twelve field hospitals, three sanitary detachments, which are of somewhat lighter construction than field hospitals and go into battle, whereas the latter have to keep well behind the line of battle.

The writer was field hospital apothecary to a cavalry division at first appointed to watch the movements of the enemy and to veil those of our own army. Of course, the hospital had always to keep up close to the movements of the foot soldiers. My own activity as an apothecary, was confined to a few mixings, accomplished under an open sky during halts, as in my quarter nobody of our division could find time to be ill. The little time given was necessary for rest. On the 19th of September, 1870, we got into a more settled kind of life before Paris. Altogether the campaign was for us a pleasure trip at State cost; first in the Rheingau, where the whole world received us pleasantly, and regaled us with good old wine; afterwards at Alsace and Vosges, where we often had some difficulties in getting our provisions, but nevertheless generally managed to live well, because we were always the first in the places evacuated by the French. Our Uhlans, the dreaded lancers, who, if they only got what they wanted, were not so bad as they appeared to be, the five surgeons and the three subordinate officers, all spoke more or less French, and got on with the French gentlemen very well. The red Geneva cross on our wagons seemed to inspire them with a special confidence, but they would often express their apprehension for our safe return, as they expected every moment their triumphant army would arrive, and it was with difficulty I could make them understand that the words retreat or flight did not exist in our language.

Each field hospital may be divided into two sections, whose charge the two eldest surgeons undertake, each furnished with a clerk and an apothecary, who have to be here, there, and everywhere; but the dispensary is so arranged that everything is in duplicate, so that each section has a complete dispensary.

On the march a hospital generally travels at a slow pace, very seldom at a trot. It is pleasant, however, to watch the movements of an army from this stand-point. The dragoons brush briskly by, then slowly comes an infantry regiment, overtaken, perhaps, by the imposing spectacle of an artillery column. Then, in their turn, there are the foraging columns, with a number of brewery wagons laden with coffee, rice, oats, bacon, bread, and flour; nothing is more interesting than such a column. Here is a French two-wheeled cart, packed so full as almost to break down, drawn by three horses, the driver, an Alsatian farmer, continually accompanied by a Schlesische cuirassier; there is a gigantic wine butt upon rather a small wagon, on the top of it a hussar, who is driving from his high position two handsome white horses; clearly he has made a call for horse, wagon, and cask at some quitted chateau. After that comes a farm wagon from the Bavarian quarter, of which the driver and horses had been sent back, but the wagon pleased the brave Uhlans too well to leave behind. They had hired a French driver with a blue blouse, who is, however, careless, and therefore they whipped the horses and let him walk behind. Gladly would he have run home if he knew where he was. Now comes a pretty Badisch rack wagon full of sides of bacon; the driver is not driving exactly to the satisfaction of a captain of cavalry, who thunders at him rapidly-acquired French oaths. But the poor fellow is a German who does not understand a word of French, so he pays no attention. This is too much for the accustomed discipline of the captain, and the Uhlans already begin to teach the driver obedience. This brings out his mother-tongue, and matters are explained.

When we came into the neighbourhood of Paris, where the villages were empty, we began to live in grand style. Good luck always brought us upon charming villas where after a little inspection we soon discovered where the proprietor had hidden his wine and provisions, whether for us or not was not always clear. One time, though, there was really a scarcity of bread, and the division would have had to starve soon had not the overseer made a requisition for two wagons full of flour. This was one step, but he next found he could not bake without an oven or yeast, and in the whole neighbourhood there had been no baking done for a week. I recommended the officer to try Liebig's method, and

explained to him the process. He accepted my proposal, and our danger was over. Our hospital was situated in the midst of a large campagna, in a fine house, in the fore-court of which our wagon stood. A water trough made a very good baking trough, into which the flour was placed and mixed with bicarbonate of soda and hot water, then placed before a fire in order to heat the dough. Then we added muriatic acid previously mixed with water. Soon the dough began to rise, to the great astonishment of our black, red, green, and brown hussar bakers. Other cuirassiers and Uhlan bakers had found seven bake ovens in the village, which they heated with window sashes and doors because no other wood was to be found. Early in the morning we had the pleasure, thanks to my military chemistry, to have beautiful white bread for breakfast, with new milk fresh from the cow. In this peaceful neighbourhood the restless "vorwärts" command was at an end, for we had settled down before Paris for several months, and established a hospital where we soon had all our hands engaged.

AUSTRIA.

(FROM OUR OWN CORRESPONDENT.)

VIENNA, Oct. 30, 1873.

ANNUAL MEETING OF THE GENERAL AUSTRIAN "APOTHEKER VEREIN."

Sept. 15 and 16.

THERE was a numerous attendance of the members; the programme was as follows:—

Monday, Sept. 15, 9 a.m.—Opening of the meeting by Director Schiffner; presentation of the yearly report and cash account, both of which were unanimously approved. Report upon the practical utility of an international pharmacopœia.

The International Congress, held at the time of the Vienna Exhibition, placed the subject of an international pharmacopœia upon the orders of the day, and passed the following resolution:—"The third International Medical Congress acknowledges the demand for an international pharmacopœia, to contain an accurate description of the natural properties of the most essential remedies, and the mode of their preparation; the official text to be rendered in the Latin language; quantities to be rendered in the decimal system. The Congress recommends that prescriptions in future be made up by metrical weight. The International Congress entrusts the fourth congress with the organization of the international special commission."

In consequence of this resolution the directory of the General Austrian "Apotheker Verein" thought well to draw the attention of the assembly to a proposal of the Société de Pharmacie, Paris, which had already been read before the third International Pharmaceutical Congress at Vienna, in 1869, and which corresponds exactly with the foregoing resolution. Twelve gentlemen are engaged in the elaboration of this proposal concerning the introduction of a universal code in Paris, namely:—M.M. Bussey, director of the higher pharmaceutical school in Paris (hon. president); Boudet, professor and member of the Academy of Medicine (president); Méhu, chief apothecary of the Civil Hospital (secretary); Adrian, pharmacien; Buignet, member of the Academy of Medicine; Duquesnel, pharmacien; Lefort, member of the Academy of Medicine; Mayet, pharmacien; Mialhe, doctor and member of the Academy of Medicine; Planchon, professor at the Higher Pharmaceutical School; Boucher, chief army pharmacist; Yung-Fleisch, professor of chemistry at the Polytechnic School.

It is to be hoped that by the next Pharmaceutical Congress in St. Petersburg, in 1874, the labours will have so far advanced as to make them a worthy object for negotiations; it will, however, be desirable for pharmaceutical associations to make this elaboration the basis for further measures to be submitted to their various governments.

At the conclusion of this day's sitting Dr. Godeffroy gave a particularly well-received address upon the progress of chemistry, as brought to light at the Vienna Exhibition.

Tuesday, Sept. 16.—The election of councillors took place, when the retiring council was again elected, namely:—Mr. Rudolf Schiffner, as President of the Association; Mr. Fauser

(Pesth), Vice-President; Mr. A. V. Waldheim, as representative; Mr. Simoni, as Treasurer; Mr. Kivisda, as Secretary; and six other deputies.

The remainder of the time was devoted to motions, proposals of new members, and nominations of honorary members.

THE VIENNA PHARMACEUTICAL SOCIETY.

This Society, which it will be remembered is a sort of opposition to the Apotheker Verein, held its anniversary on the 25th of September. Twenty-five members were present, who unanimously elected Mr. Carl Brants, apothecary in Vienna, as President, and Dr. Hillmann, editor of the *Pharmaceutical Post*, as Secretary of the Society. The object of this Society is not quite clear, but it is said that the new president has made himself unpopular in the "Apotheker Verein," but wishes to play a part at any cost. If the dissatisfied portion of the apothecaries had felt themselves strong enough at the last general assembly of the "Apotheker Verein," they might have brought the old directory to the ground and raised men of their own choice to the head. But being a minority, their only chance was to form a new counter society: whether the interests of pharmacy will thereby be advanced remains a question.

It is further mentioned that the members of the new society are all those pharmacists who demanded freedom of pharmacy in Austria, and curiously enough they have elected a decided opponent of free trade as their president.

CAMPFOREIN.

During the cholera epidemic in Vienna the doctors of the various cholera hospitals used with great success a new remedy called "Campforein." It is prepared simply by the induction of chlorine gas into pure turpentine oil until saturated; it gives a thick heavy oily fluid of brown colour, with a strong smell of chlorine. It must be freed from muriatic acid, which may be done by washing with water. The remedy is applied by placing a portion into a flat vessel and holding it to the patient to inhale. This indicates that oil of turpentine is the best absorbent of chlorine gas, and therefore can be employed with advantage in operations and other cases where chlorine is evaporated in large quantities.

CHINESE AND OTHER PHYSIC TEAS.

By P. L. SIMMONDS.

THE subject of adulterated Chinese tea has recently occupied a large share of public attention, and in a dietetic article of such large consumption it is of the highest importance that it should be sold pure. The Chinese make for their own use certain "physic teas," but they have recently taken to compounding more extensively than ever medicinal teas of a very injurious character for the outer barbarians. I propose to describe first these physic teas which they consume themselves—to say a few words on the medicinal properties of tea, if pure—to speak of the injurious effects of some of the adulterated teas; and, lastly, allude briefly to some other medicinal teas than those from the tea plant proper.

We sometimes take tea medicinally, under the impression that it may be beneficial to the nerves and the system. But the Chinese carry this idea out more systematically, and make and sell what are called "physic teas."

The following are translations from the Chinese chops of various teas of this kind, which were shown at the first London Exhibition:—

1. Made from the commoner descriptions of black teas, adulterated with herbs, and used as a universal medicine. The cakes are made on the fifth day of the fifth month, or "dragon's feast," at noon, and come from the province of Fokien.

2. A tea said to dissolve a glutinous spittle, to dispel huskiness, to quiet troubled feelings, to clear the mind, to brighten the vision, to engender a wholesome moisture in the mouth, to moisten the lungs: its odour is fragrant, its taste savoury. This cake is much used by persons when travelling.

3. Called Suum Kok, and is considered useful in curing a variety of complaints; but fevers and rheumatic attacks are principally mentioned on the cards.

4. A tea from the ridge, or back, called the "Dragon's Cavern," whence the tea is called "Dragon's Back Tea." It is said to be effectual in quieting troubled feelings, assuaging thirst, removing undigested food, dissolving phlegm, and enlivening the spirits.

5. Poo-Noh tea, from the department of that name, in the province of Yunnan, and is used to prevent indigestion.

6. Another specimen from the province of Yunnan, said to be unadulterated with herbs, and used for the same purpose as the last named.

7. Sung-Lo tea-cake. Sung-Lo is in the province of Ganhway, near Nankin. The virtues of the tea have been doubled by its being done up into this cake. It is particularly powerful in removing all kinds of inflammatory diseases, as also those arising from the impeded circulation of the fluids.

[The patentee in England of a kind of brick tea, sold in tablets, under the name of "consolidated tea," has evidently taken the idea of its improved virtues in this form from the Chinese, for among the assumed advantages set forth are the following:—"Theine, the essential property in tea, has a tendency to prevent the decay of bone; hence the natural craving after tea by most elderly people. The process of compression thoroughly brings to the surface the theine in tea, thus making consolidated tea stronger and better in flavour."]

8. Same as No. 6, only smaller.

9. Is a round cake, also from the province of Yunnan, used for assisting digestion. A cup of this tea is found very beneficial in removing repletion.

10. Is called Heong-Pien, and is used as a drink on hot days. It is supposed to cool the blood.

11. Chin-Chew basket tea, called Lek-Oan. This tea is exported largely to Batavia.

12. Cakes of coarse tea, said to be used after too large an allowance of Sam-shoo, or spirit. One cup is supposed to be sufficient to remove any ill-effects of the previous night's debauch.

[Will no one import this tea? It would become a fortune as a patent medicine.]

Thus much for the *bona fide* Chinese "physic teas," as prepared for use by the Celestials themselves.

Dr. Ure states that in its composition tea approaches by the quantity of nitrogen it contains to animalized matter, and it seems thereby qualified, according to Liebig, to exercise an extraordinary action on some of the functions of the human frame, especially the secretion of bile. Peligot, in a paper on the chemical combinations of tea, read before the Paris Academy of Sciences, stated that it contains essential principles of nutrition, far exceeding in importance its stimulating properties, and showed that it is, in every respect, one of the most desirable articles of general use. One of his experiments on the nutritious qualities of tea, as compared with soup, was decidedly in favour of the former.

The effects of tea on the human system are, first, stimulant and then narcotic, according to the strength of the beverage. In moderation tea is an excellent diluent; it promotes digestion, and stimulates the renal glands. The constant use of tea, however, in large quantities, especially by persons living on a poor vegetable diet, is not favourable to physical strength or nervous energy; and to persons engaged in sedentary employments, and imperfectly alimented, the frequent imbibing of tannin (for tea contains about 40 per cent.), has a decided and manifest pernicious effect. How far the excessive use of strong tea in China, by alternately elevating and depressing the nervous system, may have led to the craving desire for opium as a counter-stimulant, is deserving of consideration.

Dr. Adam Smith, in a paper read a few years ago before the Society of Arts, recommends the use of tea in the following cases:—"After a full meal, when the system is oppressed; for the corpulent and the old; for hot climates, and especially for those who, living there, eat freely, or drink milk or alcohol; in cases of suspended animation; for soldiers who, in time of peace, take too much food in relation to the waste proceeding in the body; for soldiers and others marching in hot climates, for then, by pro-

moting evaporation and cooling the body, it prevents in a degree the effects of too much food, as of too great heat.

There is no doubt that tea acts differently on various individuals. In some it is highly stimulant and exhilarating; in others its effects are oppression and lowness of spirits. It has been remarked that all tea-drinking nations are essentially of a leuco-phlegmatic temperament, predisposed to scrofulous and nervous diseases. The Chinese, even the degraded Tartar races amongst them, are weak and infirm, their women subject to various diseases arising from debility. Although their confined mode of living, and want of the means of enjoying pure air and exercise, materially tends to render them liable to these affections; still their immoderate use of strong tea, taken, it is true, in very small quantities at a time, but repeatedly, greatly adds to this predisposition. Although tea may in general be considered a refreshing and harmless beverage, yet in some peculiar cases it is decidedly injurious; and many diseases that have baffled all medical exertions have yielded to the same corrective means, so soon as the action of tea has been suspended.

Dr. T. Short, of Sheffield, published a curious treatise on tea early in the last century, of which I have the second edition now before me, dated 1730. It is in quarto, entitled, "A Dissertation upon Tea, explaining its Nature and Virtues by many New Experiments, and demonstrating the various Effects it has on different Constitutions," etc. I contains much shrewd observation, mixed with a good deal of prejudice and nonsense.

That tea is an excellent antidote against sleep is well known. Alan de Rhodes, in his "Voyages and Missions Apostolique," tells us he always cured himself of a periodical pain in his head by tea. Having often occasion to sit up whole nights in China, to take the confessions of dying people, he found such benefit from tea in those quiet watchings that he was always as vigorous and fresh next day as though he had rested all night in bed. Nay, by the assistance of tea he sat up, as he says, six nights together! (*Vide* Dr. Chamberlain, in "Treatise of Coffee, Tea, and Chocolate," 12mo, 1685, p. 46). Another property of tea is also mentioned in this work, p. 10. "It is also the custom with some to drink tea before they go to the tavern to prevent drunkenness."

William Ten-Rhyne (formerly botanist and chemist to the Emperor of Japan, and afterwards professor of botany and anatomy at Batavia), in his Japanese observations says:—"Tea purifies the blood, drives away frightful dreams, dispels malignant vapours from the brain, mitigates dizziness, pain of the head, is good in dropsies, dries up rheums in the eyes, corrects the acrimony of the humours, opens obstructions of the bowels, restores the sight, temperates dry humours, cures a hot brow, mollifies a hard-used spleen, restrains sleep, makes the body lively and expels drowsiness, cheers the heart and drives away fear, appeases the gripings and wind in the guts and womb, corroborates the viscera, strengthens the memory, sharpens the wit, temperates the bile, is excellent in the stone and gravel, and, lastly, promotes kind correspondence between both sexes." But he does not attempt to give any rational account why we may expect such extraordinary benefits from it, or what constitutions and countries it is most agreeable to; and it is somewhat strange he should reckon it such a beneficent medicine in dropsies, malignant vapours, gripes, flatulency, and relaxed viscera, since experience seems so plainly to contradict him.

A writer in the *Grub Street Journal* of 1737 thus comments upon tea:—"If we compare the nature of tea with English diet, no one can think it a proper vegetable for us. Its essential salt does not hold moisture enough to be joined to the body of an animal; its oil is but very little, and that of the opiate kind, which irritates and frets the nerves. But were it entirely wholesome as balsam or mint, it were yet mischief enough to have our whole populace used to sip warm water in a mincing manner twice a day. Tea gives an effeminate turn to the people."

"It is poison," said an old woman to Dr. Johnson. "Madam, it may be poison, but I have been seventy years dying of it," said he, draining his sixth evening bowl.

Some eminent authors have strenuously argued that we derive as much benefit from several plants of our own

growth as from this exotic leaf, to which Dr. Short thus replies:—"But the question lies not here—whether we have not as good, nay, better specifics (if I may be allowed the term for once) in many cases than tea, for all must own that camomile flowers are a better febrifuge and carminative; the fibres of black hellebore root a better attenuator of the blood in plethoric constitutions; pennyroyal and horchound more efficacious in exciting pectorals, etc. But the question is—1. Whether we have any one domestic plant whose general and dietetic use is equally beneficial with that of tea; or, 2. Whether we have any domestic, or even European plant, whose principles are in the like proportions, or combined and modified after the same manner, and consequently capable of producing the same effects, which will be difficult for those to prove who seem forward to assert it."

In England we think we are paying pretty high prices when we give 4s. or 5s. per pound for tea; and considering the nature and composition of much that is sold us, we are, perhaps, justified in grumbling. But the Russians will pay as much as 50s. sterling per pound for their choice caravan tea. If this be a most incredible price to pay for tea in Russia, what will be thought of a higher price still being paid by the princes and superior mandarins of China for tea made in their very neighbourhood. Yet this is absolutely true, and serves to show us how very highly the best tea of China is prized by her own people, who undoubtedly possess a delicate and refined taste for tea, such as we can scarcely comprehend. But it is only black tea that they drink, which is always pure, and has not the bad effect on the nerves which green produces. Not a single pound of green tea is consumed in the whole Empire of China, the consumption being entirely confined to the black. The green is prepared exclusively for export. The highest price for the very best kind of green tea in China does not exceed 3s. or 4s., whereas for black tea a person can go as high as three or four guineas per pound. Of course, tea of this quality is produced in very limited quantities. If he uses this choicest kind, which is only grown on the tops of mountains, and of which only a few hundredweight are produced in the empire, he has a baby teapot, an inch and a half high, and about an inch in diameter. A pinch of tea is put in, about twenty drops of hot water turned on, and it is ready to sip. It would be very intoxicating to drink much; even the taste of a sip will remain in the throat for hours after the tea has evaporated. The more common way of tea-drinking is to have a teapot, six feet high, and three feet in diameter, kept warm, ready for anyone to drink who chooses.

But the Chinese think any rubbish is good enough for foreign trade. Mr. Medhurst, British Consul at Shanghai, tells us that:—"The preparation of the willow leaf for mixture with tea is openly practised in the villages on the Hongkew side of the Soochow Creek, and it has become an industry which claims an important share of the attention of the villages of that and other localities. The banks of the numerous creeks are planted with willow trees, the young leaves of which are collected in April and May, very much in the way that the tea-leaf is gathered. The produce is then collected in heaps on the hard threshing floors of the hamlets, and is allowed to undergo a mild fermentation in the sun. The leaves are then manipulated, similarly to those of the ordinary tea-plant. They are sorted into kinds, according to sizes, and afterwards roasted in common tea ovens. The appearance of the stuff, after this treatment, is not unlike that of the genuine article, and it is carried to Shanghai, and there intermixed with pure tea, at a ratio of from 10 to 20 per cent. The cultivation and preparation of willow leaves were begun in Shanghai about ten years ago, and have increased year by year."

Mr. E. Warrington, of Apothecaries' Hall, in his "Observations on the Teas of Commerce," published some years ago in the general Proceedings of the Chemical Society, pointed out the sophistications and adulterations which were carried on in these cheap imitation teas, the black being called "the flower caper," and containing 37.5 per cent. of ash, and the green "lie gunpowder," containing 45.5 per cent. These samples had no tea-leaf to be seen, for the whole composition was tea-dust, with dirt and sand, agglutinated into a mass with a gummy matter most probably manufactured from rice-flour, and then formed into granules of the desired size, and lastly dried and coloured, according to the kind required by the manufacturer, either with black lead, if for

black tea; or with Prussian blue, gypsum, or turmeric, if intended for green.

It has often been stated, in the reports of Dr. Letheby to the Medical Officers of Health to the Corporation, that we are receiving from time to time the most worthless trash in the form of spurious leaves, lie tea or Maloo mixture, re-dried exhausted tea, and dirt of the filthiest description. Not a trace of the crystalline nitrogenous substance called "theine" was found in them,—the characteristic active principle of tea, and the proportion of which in good sound congou is not less than 2 per cent.

Dr. Letheby well remarks:—"As to the consequence of this on the public health it is difficult to speak, for the physiologist is hardly able to say what precise function tea serves in the animal economy, notwithstanding that ages of experience in all climates, and in all conditions of society, would seem to show that it supplies some natural want, and meets some deep-seated necessity which science is unable to fathom. Everywhere, in fact, among all races of men, as if by an untaught physiological instinct, vegetables, containing the same active principle as tea, have been sought for dietetical uses, and whether they perform the functions of helping assimilation, by making food go further in its nutritive power, or whether they ease the functions of life, and, as it were, oil the machinery of the animal frame, or whether, as Liebig supposes, they furnish, like soup, certain complex constituents which exert an exciting and vivifying action on the animal economy, it is certain that their efforts are salutary, and that they supply some undefined want. As regards tea, this is especially so with the aged and infirm, and among the low-fed and poorer classes of the community, who will always make a sacrifice of more nutritious food for the cheering effects of a little tea. Among the poor, therefore, the sale of such spurious matter is not merely a fraud upon the pocket, but it is also a fraud upon the wants of the system, and in this sense it is most reprehensible. To say, indeed, that the spurious matter is not unwholesome, is no answer to the fraud committed upon the system, when in times of necessity the beneficial action of a cup of tea has been sought for and has failed."

In an exhaustive analytical report, published lately in the *North British Daily Mail*, of the teas sold in Glasgow, twenty out of twenty-seven samples of black, and all the green teas, were found to be more or less adulterated with catechu, iron, plumbago, gypsum, talc, kaolin, steatite, etc. One of the most important impurities found in them was catechu or gambier, a substance possessed of very highly astringent properties, and which, on this account, is much in use in the treatment of diarrhoea. It is not only possible, but probable, that to the constant action on the alimentary canal of this substance, may be ascribed much of the indigestion and intestinal sluggishness so frequently observed in persons who consume large quantities of tea.

In a recent examination made by Dr. Hassall of twenty samples of caper tea, only one was found genuine. What is termed "iron filings," but is in fact titaniferous iron sand, ranged up to 6 per cent., and fragments of granite or sand up to nearly 13 per cent. The ash in these "lie teas" varied from 13 up to 53 per cent., instead of the ordinary 3 per cent. in genuine tea. The iron with the natural quantity of tannin in the tea were made into ink for writing with. This tannate of iron necessarily gives a dark colour to the infusion. The quantity of copperas taken in tea is, of course, a minimum dose, but a slow poison corroding, stimulating and inflaming the stomach, causing in many instances spasms; headaches and nervous affections in every instance.

Iron may be a very good medicine, taken under proper advice and in regulated proportions, but to be taken daily and continuously in large doses must be highly injurious to the system. The practice of mixing iron with tea-leaves in China is becoming much too general, instances of which were shown at the London Exhibition this year, in the case of adulterated substances by the Board of Inland Revenue Laboratory, and in the collection of commercial teas exhibited by Harrison and Crossfield, of 3, Great Tower-street.

In the latter there was a sample of tea weighing exactly four ounces, composed of iron, every particle of which was extracted from a pound of common Canton gunpowder by the magnet, being equal to 25 per cent. of spurious matter

injurious to health. Another parcel tested yielded 29 per cent. This adulteration takes place entirely in China. It is not to be expected that astringents like tannin and iron can be swallowed with impunity.

There is no reason why we should be poisoned as well as swindled in this important article of consumption, which is so universal and increasing so rapidly. In each of the last three decennial periods, the average consumption per head of the population shows an increase of one pound, last year it had reached four pounds per head, and this year it will be still more. But the consumption is not uniform for the upper and middle classes consume individually about five and a-half pounds annually, while the poorer and working classes take only about two pounds per head.

In London the poor needlewomen, whose miserable remuneration admits neither of the means nor the time necessary to purchase or to cook butchers' meat, sustain life upon dry bread and tea, the latter affording a gentle stimulant to the exhausted frame, which is not followed by the debilitating reaction of stronger beverages. The same course is also followed by the numerous class who seek their living by selling in the streets, by charwomen, and by most of the females employed in the various manufactories in the metropolis.

The bulk of our tea imports still come from China—160 million pounds last year—but British India is progressing rapidly in tea production, having shipped 18 million pounds last year, besides her own home consumption. It is to be regretted that the European supply of this sound and pure tea is likely to be stopped, as the whole crop is being secured in advance by the northern Asiatic tribes, who begin to find it cheaper and better than that from China.

And now a few words in conclusion on what may be termed other medicinal teas.

Pechlin, an old writer of last century, asserts that we may receive as much benefit from several of our own vegetables as from tea, and is very lavish in his praises of *Veronica officinalis* and *Betonica officinalis*. The leaves of the former, under the name of European tea, have been considered diaphoretic, diuretic, expectorant, tonic, etc., and were formerly employed in pectoral, nephritic, and other complaints. Betony formerly ranked high among the "simples" for its sovereign virtues. Betony tea taken for a length of time will, it is said, cure inveterate headaches by strengthening the seat of all disorders—the stomach.

Borage tea was formerly considered cordial, opening, and cooling, and in many parts of England they make borage one of their materials in brewing.

The French peasants make an aromatic drink from the leaves of the black-currant tree, and believe it to be a specific for indigestion. They have also learned to appreciate the flavour, aroma, and virtue of borage tea.

In "A Dissertation on the Virtues of Sage and Water," published in 1730 by Dr. Short, the writer gives some curious particulars respecting this tea substitute. He devotes fifteen quarto pages to a description of the valuable medicinal and hygienic properties of sage, and yet he tells us he professes to write very briefly on it, because it is of longer and more universal acquaintance in Europe than tea, and also because Franciscus Paulinus had already favoured the world with a very useful and elaborate treatise on sage (printed at Nuremberg, 1688, in octavo.) Paulinus divided his book into four sections, and each of these into sundry chapters. In the first section he gives us its various names, differences, culture, qualities, preparations, and uses. In the second chapter, which he calls *Medico-chymica*, he lays open, in three parts, how it is serviceable in diseases of the three ventricles of the body—viz., of the head, breast, and belly; and reduces his prescriptions of it to all forms, as infusions, decoctions, electuaries, boluses, pills, powders, and draughts. In the third he accounts for its great virtues in fevers and external disorders, and plentifully supplies each chapter and section with various forms of prescriptions, borrowed from other physicians, or built on proper observations. He says, "Where sage grows naturally in great plenty, there diseases of the head are most frequent; as though kind Nature had placed the poison and its antidote, the disease and its cure, next-door neighbours." The last section contains its uses in cookery.

In parts of North America tea is made of the leaves of the creeping winter green (*Gaultheria procumbens*). It makes a

very pleasant and soothing drink in nervous fevers, and is useful in asthma. Under the name of West Indian tea the leaves of the shrubby goat-weed (*Capraria biflora*) not only resemble those of tea, but make an equally agreeable decoction, which is also recommended as an excellent febrifuge. The roasted leaves of lemon grass (*Andropogon citratus*) are used in India in infusion as an excellent stomachic. The dried leaves of a fragrant species of orchid (*Angraecum fragrans*), under the name of Fahan tea, has a reputation on the Continent, being said to produce a soothing effect, but without causing sleepiness.

Dr. Giraudy, who made it the subject of many experiments, states that he found in the pleasant aroma of this plant a diffusible stimulant, suited to deaden nervous sensibility; in the bitter principle an excitant calculated to reanimate the nutritive faculties; and in the mucilage an emollient for relaxing the tissues. Hence he considers it a good therapeutic agent for facilitating digestion, for calming coughs and chest diseases, for dissipating spasms, aiding expectoration in colds, whooping coughs, asthma, pulmonary complaints, and all cases where inflammatory and nervous irritations are prevalent.

A cane, the kawa-kawa or pepper tree, similar to the Otaheitan kava, is occasionally used in New Zealand in the place of tea; the taste is pleasant and very aromatic. It is likewise a narcotic in effect, and medicinally is esteemed a purgative.

Yellow herb (*Helliborus trifolius*), a medicinal plant, abundant in Newfoundland, is much used by the French colonists of St. Pierre and Miquelon, in infusion, as tea, for its agreeable bitter tonic.

Appalachian tea, a decoction of the leaves of *Ilex vomitoria*, is an esteemed diuretic of the Creek Indians of North America, under the name of "black drink."

These tea-substitutes, medicinal or dietetic, are interesting and curious, but they open up much too diffuse a field to be followed up in a brief article.

PROFESSOR WILLIAMSON ON THE ATOMIC THEORY.

BY W. H. WALENN, F.C.S.

THE retirement of Dr. Joule from the Presidency of the British Association, two months anterior to its meeting in Bradford, gave an opportunity for the election of Professor Williamson to fulfil the duties of that office. Professor Williamson's scientific knowledge, his powers of teaching, and his genial manner, gave promise of an intellectual treat in his inaugural address opening the meeting at Bradford, on Monday, September 17th, 1873. It is not surprising that with so short a notice he should have been compelled to limit the theme of his address to chemical science, that being his specialty and the nucleus to which he is wont to bring his varied attainments. But we may hope that future presidents will not view Professor Williamson's address as a precedent for introducing special views of their own, subject to the exclusion of all other topics—astronomical, mathematical, geological, botanical, zoological, geographical, physical, and statistical. The appointment of Dr. Tyndall as president of the meeting at Belfast next year promises no such limitation as Professor Williamson found to be necessary.

The address principally relates to two subjects only. First, the atomic theory in its most materialistic form. Second, the advantage of chemical study and work as developing the intellect and the character of a student. To enable the reader to realize the first point, it will be well to give an abstract of the history of the atomic theory, then to expound Professor Williamson's view, and finally to deduce, from his and from other opinions, the probable influence of Professor Williamson's address on the chemistry of the future, and the results to which the molecular philosophy of the present day seems to point.

Much of what follows on the history of the atomic theory is taken from an article in "The London, Edinburgh, and Dublin Philosophical Magazine";* the entire history

* "On Statistical and Dynamical Ideas in Chemistry." Part III.—"The Atomic Theory," by E. J. MILLS, D.Sc. "Phil. Mag." Aug., 1871.

shows how important it is to bring other evidences besides those afforded by analytical chemistry to bear on this great question, and how necessary it is to avoid dogmatic teaching in a point which admits of logical deduction and definite statement. Lucretius (l. 531-533) says:—

"Hæc naque dissolvi plagis extrinsecus icta
Possunt; nec porro penitus penetrata rotæ;
Nec ratione queunt alia tontata labaro."

Translation:—["Nor, struck with outer blows, can these dissolve;
Nor, penetrated deep, be disentwined;
Nor, tried in other mode, can waver ought."]

Lucretius flourished B.C. 55. Prior to Lucretius there were, however, Anaxagoras, the preceptor of Socrates (400 B.C.), Leucippus, Democritus, and Epicurus; all these philosophers propounded similar opinions to Lucretius.

The ideas of Newton are generally believed to follow in the same strain as those of Lucretius, for he says,* "All things considered, it seems probable that God in the beginning formed matter in solid, massy, hard, impenetrable, moveable particles, of such sizes, figures, and with such other properties, and in such proportion to space as most conduced to the end for which He formed them; and that these primitive particles being solids are incomparably harder than any porous bodies compounded of them—even so very hard as never to wear or break to pieces, no ordinary power being able to divide what God himself made one in the first creation." The atomic theory as understood by the ancient philosophers and as evidenced by their employment of the word atom (derived from *ἄτομος*, indivisible) must turn upon the indivisibility of certain particles of matter. Apparently, Newton allows of indivisibility only so far as ordinary or natural forces are concerned, for he goes on to say "but whether these parts, distinct and as yet undivided by natural forces, are able to be divided and sundered in their turn is uncertain."† It is probable that Newton had hardly reached a state of absolute decision upon this subject.

Descartes has the following passage (translated):—"It is also very easy to recognise that there can be in it" [substance] "no atoms, that is to say, parts of bodies or matter which are by nature indivisible, as some philosophers have imagined; inasmuch as, however small we may suppose these parts to be, yet, since they must be extended, we see that there is not one of them that cannot be further divided into two or more others of smaller size, and hence is divisible."‡

Leibnitz asserts§ that "a material being could not be at the same time material and perfectly indivisible or endowed with real unity" (p. 580). "Material atoms are contrary to reason, besides being still composed of parts; for the invincible attachment of one part to another (if we could reasonably conceive or suppose such a thing) would not destroy their diversity" (p. 584). "Limits are viciously assigned to division and subtleness as well as to the richness and beauty of nature, when atoms and a void, or certain prime elements including the Cartesian, are set up in the place of true units, when the infinite is not recognised in everything, and the exact expression of the greatest in the least" (p. 599).

The next step is one which is strongly marked on account of the expanse of philosophical teachings at the end of the last century and the commencement of the present one. In the old philosophy (virtually the doctrine of Lucretius or perhaps it may be said of Anaxagoras), the atomic theory had simply to explain in a rough and ready way the constitution of bodies in the complex, and without reference to the sixty-five elements that chemistry takes cognizance of. The only force in nature that was fully realized (as fully as it could be without citing its correlation to its companion forces) was mechanical force. This condition of the human mind in relation to its appreciation of the laws of nature is evidenced by the way in which the atomic theory is put forward by the ancient philosophers. The only idea they had of dividing a substance was by blows, hence the unit of division was so hard that it could resist a mechanical blow. In the new philosophy other conditions had to be satisfied

by the atomic theory, and Dalton* was the first to give a definite form to the shape which the atomic theory must assume to account for the reactions that chemistry affords. The theory had not only to account for the stable existence of bodies that are mechanically homogeneous, but it had to account for the formation of stable compound bodies out of the sixty-five elements that chemists presume to be homogeneous. This was done, according to Dalton, by the juxtaposition of ultimate particles of the elements, and this process results in molecules, or "atom clusters," which themselves are juxtaposed to afford the substances of which our senses can take cognizance.

The proportional numbers adopted by Davy and the equivalents used by Wollaston, show that neither of these philosophers accepted the atomic theory in its gross finality, and a large number of chemical writers since that time have simply used the word "atom" under protest and in reality regretting that the untutored energy of our forefathers led them to adopt the word atom, and to foist upon posterity the inference of a law which has not been proved to be a fact. Faraday, Sir B. C. Brodie, and many other eminent chemists have only used the word atom under the protest above stated, or have not used it at all. Dr. Odling, Dr. Russell, Dr. C. R. A. Wright, Dr. E. J. Mills, Dr. H. E. Armstrong, Dr. Roscoe, and others also object to be tied to the finality of atoms; they regret that the word atom was ever introduced into physical or chemical science.

On the other hand Dr. A. W. Williamson, Dr. Debus, Dr. Schorlemmer, and some others constitute themselves the disciples of Lucretius, of Dalton, and of Berzelius in respect to their ultra views on the subject.

Having giving a few points in the history of this subject from the earliest times, it may be well to apply some of the principles of logic, of mathematics, and of physical science that have lately been realized, to the elucidation of the question of atoms or no atoms.

Sir William Thomson† endeavours to obtain the size of atoms—1st, by bringing to bear upon them Cauchy's proposition respecting the wave motion which constitutes light; 2nd, by applying Joules' theory of contact electricity; 3rd, by the application of the thermal effect of capillary attraction; 4th, by the principles of the kinetic theory of gases. The results arrived at by this philosopher by these means are obtained by methods that are models of logical reasoning, and, although they are diverse in each case, numerically speaking, certain limits are defined between which lie the true dimensions of the particles concerned; but it is entirely an assumption that these are atoms. In the first case the particles may be regarded as spherical, in the second case they seem to be of the form of thin plates, in the third case a different kind of molecule is given to water and to steam, and in the fourth case the suggestion is made that atoms possess the properties of the substance *en masse*, and that, when gaseous, they are soft elastic particles. The weak point of this method is that each process of reasoning gives a different kind of atom, and that in the case of elastic atoms homogeneity is not possible.

Chronologically speaking, a "paper" which has done much to place atoms before scientific men in a strong light, and which, doubtless, has led to the prominence given to the subject in the Bradford address, was published anterior to that of Sir William Thomson's just noticed. On June 3rd, 1869, Professor A. W. Williamson, as President of the Chemical Society, delivered a lecture on the atomic theory,‡ in which, upon grounds which many deem insufficient, he claims to have established this theory in its most materialistic form. He treats the matter entirely from a chemical point of view, and the atoms, if any, which the physioist has to consider, are left out of his category. Although, in the conclusion of his lecture he states that "Our atomic theory is the consistent general expression of all the best known and best arranged facts of the science, and certainly it is the very life of chemistry," in the paragraph but one before that he takes care to remark that "In using the atomic language and atomic ideas, it seems to me of great importance that we should limit our words as much as possible to statements of facts, and put aside into the realm of imagination all that is not

* Horsley's "Newton," vol. iv. p. 260, *et seq.*

† "Principia," vol. iii. p. 358 (1713).

‡ Cousin's edition (1824), vol. iii. p. 137.

§ "Œuvres," (Jacques), vol. i.

* See "New System of Chemical Philosophy," A.D. 1808.

† "Nature," March 31, 1870.

‡ "Journal of the Chemical Society," new series, vol. ii. (1869) p. 328.

in evidence. Thus the question whether our elementary atoms are in their nature indivisible, or whether they are built up of smaller particles,* is one upon which I, as a chemist, have no hold whatever, and I may say that in chemistry the question is not raised by any evidence whatever." If this last sentence means anything, it means an entire retraction of what through combining proportions, through multiple proportions, and through the theory of types, Professor Williamson has laboured in this paper to prove. The weight of this paper in regard to the purpose for which it was written is therefore regarded by many as *nil*.

We now resume the consideration of the Bradford address in respect to the utterances intended to advocate the atomic theory. After a laboured defence of this theory, and some remarks upon exchanges of atoms, the President goes on to say—"I cannot quit this part of our subject without alluding to the fact that some few chemists of such eminence as to be entitled to the most respectful attention, have of late years expressed an opinion that the idea of atoms is not necessary for the explanation of the changes in the chemical constitution of matter, and have sought as far as possible to exclude from their language any allusion to atoms. It would be out of place on this occasion to enter into any discussion of the questions thus raised; but I think it right to point out:—1st. That these objectors have not shown us any inconsistency in the atomic theory, nor in the conclusions to which it leads. 2nd. That neither these nor any other philosophers have been able to explain the facts of chemistry on the assumption that there are no atoms, but that matter is infinitely divisible. 3rd. That when they interpret their analyses, these chemists allow themselves neither more nor less latitude than the atomic theory allows; in fact, they are unconsciously guided by it." The inconsistencies in the atomic theory, as Professor Williamson accepts it and endeavours to promulgate it, are numerous, at least so it appears to the writer. 1st. It is purely an assumption that matter is not infinitely divisible, since no experimental fact has hitherto been found to prove the existence of indivisible particles or atoms. 2nd. The atomic weights of the elements, as recently remodelled by Stas and others, by no means point to the existence of indivisible particles aggregated together particle by particle; even the numbers assigned in ordinary text-books, Roscoe's for instance, are sufficient to suggest to the mind the existence of incommensurable quantities in physical facts as well as in mathematical work, considering that if hydrogen (at. wt.) = 1, aluminium = 17.4, chlorine = 35.5, cobalt = 48.7, palladium = 106.6, and so on, and that the correctness of these numbers, even to the first place of decimals, cannot be vouched for. 3rd. A concurrent notion to that of atoms and dependent upon the atomic theory more or less for its realization and its illustration is that the elementary substances that are classified by men as such, are elementary in the abstract, and enter by conjunction rather than true combination into the constitution of a recognised compound body. This has been carried to such an extent by a German philosopher, that he ends his essay with a statement that, in dividing mercuric sulphide so as to arrive at its atoms, the last chop would reveal sulphur on one side of the knife and mercury on the other.

The explanation of combining proportions by means of ratios is far more satisfactory than the supposition of natural and indivisible units of matter. This view of the subject was elucidated and illustrated in 1870 by the writer of the present paper,† when the principles of limits and of the differential and integral calculus were advanced in aid of the wider range of thought. The nearest approach to the application of mathematics to chemistry is the calculus of chemical operations brought forward by Sir B. C. Brodie, in 1866, but doubtless he will admit that mathematics and chemistry have yet to be more firmly united to render chemistry an exact science. It will be a fortunate day for chemical science when the underlying forces that constitute its real entity are so well known that their action can be expressed in foot-pounds per second.

The most correct way of putting the third point of Pro-

fessor Williamson's statement, above quoted, is perhaps:—"The non-atomic theory allows of all latitude within the laws of nature, and the atomists themselves unconsciously admit of the theory of proportions above cited, and thus work in a wider field than they allow themselves."

An able article in the *Saturday Review** presents the reckless assumption of finality by the atomic theory in forcible argument, as follows:—"The point in dispute is, whether the hypothesis of the truth of the atomic theory is necessary to explain chemical phenomena, and whether it is sufficient to explain the phenomena of physics. And here evidence is sadly against the theory. The chemist must remember that his methods of analysis are no longer the subtlest that we have. The spectroscope and the polariscope tell us of structure and heterogeneity where the chemist finds only uniformity. He would have us believe that iron is nothing but an agglomeration of like atoms without definite arrangement. In however small quantities it be, its properties are the same; no combinations into which it enters suggest the idea that it has been resolved into component elements, so that he would have us believe that it is composed of uniform atoms, like and indivisible. But the spectroscope tells us a different tale. It shows us that these pretended atoms, when heated sufficiently, send off scores of different kinds of light, each kind perfectly definite and separately recognisable; and as we know that each of these must have a different rate of vibration, which again must have been excited by a source having a like rate of vibration, we see at once that this would-be atom is a wondrously complex system."

In his advocacy of the influence of chemical study and work upon the intellect and character of a student, Professor Williamson struck a chord which is dear to the hearts of all chemists. His remarks upon the observation of phenomena as a training ground, and accuracy of manipulation and of mode of thought as a means of extending knowledge and treading new paths of work, are powerful, and are echoed by all. The sound lessons in induction, the habit of truthfulness in description and in realization, as well as the golden rule of testing results in many ways before placing faith in them, were well placed before his auditory by the Professor. It is not to be supposed, however, that we hold with chemistry performing the functions of a panacea in education; it will never supply the place of mathematical instruction, or other mental exercises. The best educated man has his mind reasonably developed in every branch of knowledge. As a finish to this part of his discourse, the President put forward an elaborate scheme of scientific education, in which the combination of a system of training with a system of examinations was insisted on, and he dilated upon the necessity of arousing public attention to the importance of a systematic scientific education to draw out effectually the latent powers of the masses.

SOME PRACTICES OF THE TRADE WHICH IT WOULD BENEFIT THE PROFESSION TO ABANDON.†

By EDMUND ALLEYNE COOK, PH.D., F.C.S.

MANY times and oft I have heard the question discussed and read discussions on the way in which the pharmaceutical career may be made to take rank as a profession, may be enabled to regain the position of dignity it once held when apothecaries were few and honoured. As you all know, the method most esteemed to attain this end has been to petition Parliament to grant exclusive privileges to such as hold the certificate of the Pharmaceutical Society—which certificate is only granted to those who pass its examinations. This may not be the place to discuss the absolute wisdom of this proceeding. The method is on its trial, and, although it is a return to the monopolizing system of ancient days, we can only say it has not yet brought in its train the ancient honours. So far as I know the pharmaceutical world, there

* The portion italicised is so marked by the author of this article.

† "Remarks on the Atomic Theory," by W. H. WALLEN, F.C.S., "Phil Mag.," Feb., 1870.

* "The British Association." The *Saturday Review*, September 27, 1873 p. 402.

† Read before the Liverpool Chemist Association, October 23.

is not now less dissatisfaction with its position than before the inauguration of the new system. The method is on its trial—results alone can decide its efficacy—and perhaps the time of trial has not yet been sufficiently prolonged to enable us either to discuss or pronounce an opinion on it.

But we can at any rate say this—Whatever means are the right ones to employ to raise the pharmaceutical faculty in the estimation of the public to such a degree that they shall esteem it a profession, they must go hand-in-hand with honesty and fair-dealing. So far as I can gather, the plea for its being considered a profession is principally that the practice of pharmacy requires an amount of skill which no person can be expected to possess without having passed through a curriculum of study sufficient to make him more than a generally well-educated man. But we must not ignore the half of what this plea carries with it, viz., that if so much skill be required to practice pharmacy rightly, an equal amount of skill must be necessary to detect imposition and fraud on the part of the skilled pharmacist if he be disposed to practice it. The very qualities on the ground of which he asks to be ranked as a professional man place in his hands a power of imposition against which he offers no guarantee whatever, and to which the public are fully aware they are often subjected.

With the medical men the inducements to fraud and imposition are so few and paltry compared with the interests at stake, that the public willingly accord confidence and consideration. No medical man would, for his own sake (to take the lowest ground), delay the recovery of his patient for the purpose of increasing his fees. But, on the other hand, how often is it the complaint of medical men that medicines they prescribe of ascertained virtue do no good unless obtained from thoroughly reliable sources? and a "thoroughly reliable source" is by no means necessarily every pharmaceutical chemist's shop.

There are two opposite ropes pulling the pharmaceutical chemist; on the one hand, he wishes to raise his calling, and on the other he has his living to get, and he naturally wants to get it as well as he possibly can. When, then, these influences do not happen to be in conjunction, the temptation is, in too many cases, to let the profession slide.

I happen to have some considerable knowledge of the wholesale drug trade, and can point my meaning more emphatically. Anyone dealing in drugs knows quite well the variable quantity of active principle contained in many of them. The jalapine in jalap root, the cantharidine in flies, the morphia in opium, the quinine in scale preparations, are excellent instances in point. I can attest that the jalapine in jalap root may and does vary from 2 to 12 per cent.; the cantharidine in flies from 1 per cent. to none at all; the morphia in opium from 10 per cent. to none; the quinine in citrate of iron and quinine from 25 per cent. of sulphate to none. And all the qualities of these different drugs are offered for sale to the pharmaceutical chemist at, of course, varying prices. As matters stand at present, he offers to the public no guarantee which he will buy and sell—and certainly the inferior drugs are bought and sold—and yet it is in the present position of matters that he asks for professional consideration at the hands of the public. Gentlemen, it is an axiom that "the public are gullible," but in hitherto refusing to your calling the consideration you have asked they have shown that they are not "gullible" to an unlimited extent.

In these days of competition it is natural for every man to wish to buy as cheaply as he can, for he knows he must sell as cheaply as his neighbours, but there is a point broadly indicated by the common sense of every pharmacist, beyond which cheapness simply means fraud; and inasmuch as he cannot lay the soothing unction to his soul that he has been deceived, cheapness beyond a certain point means fraud on the public. If the market price of sulphate of quinine is 9s. per oz., and a druggist is offered and buys citrate of iron and quinine purporting to contain quinine equal to 25 per cent. sulphate at 2s. per oz., or, in other words, purporting to contain 2s. 3d. worth of quinine alone he must be a very stupid man to suppose it genuine, and it would take a very "gullible" public, acquainted with the fact, to acquit him of *unprofessional intentions*. And even if he is informed that the reason why the preparation is sold at so low a price is because it is infinitely poorer in quinine than the orthodox preparation, the character of the transaction can bear but one opinion,

for the object of its purchase is to retail to the public who know of one quality only.

Yet it is well known to every wholesale druggist that by far the largest quantity of citrate of iron and quinine sold is the cheap variety, the variety sold so low that it is impossible it could contain the official quantity of quinine. I have heard of instances where houses offering the good variety and being under-sold have represented to the druggist the impossibility of making the genuine thing for the amount he had paid, and the reply was,—“We obtain it from a highly respectable house, in which we have every confidence.”

I ask you, gentlemen, Is it likely, when such things as these can be, that your calling will be raised in stand-point? Is it likely that any number of Acts of Parliament granting monopolies will effect that object? There is something left undone without which the public will not regard you in a higher light with more respect. In the first place, if it is desirable or essential for a candidate to know all about the source of oil of rhodium, for instance, it is still more essential that he should be able to test the purity and strength of every drug he deals in. By this I do not mean that he should be able to say how it is done, but to satisfactorily do it. In the next place, if pharmacists voluntarily offer the public a guarantee of the purity and strength of their articles, transgression of which will entail loss to themselves, they will add a very large claim to consideration and esteem. And if they do not offer it the time, I firmly believe, is not far distant when the public will demand and enforce it, and it will be as dangerous to sell drugs below the official strength as it is to sell adulterated tea or butter.

A guarantee of this kind can easily be offered, and so far as this city is concerned, it is within the power of the Chemists' Association to initiate the reform. If each pharmaceutical member of this association binds himself to buy and sell only drugs of known and recognised strength, and in cases of doubt to submit them to analysis, either by himself or by some appointed chemist, the influence of the association would take a great leap onwards, the confidence of medical men would be gained, and through these means the respect and consideration of the public, for which you seek. It would be futile to assert that drugs of equal and recognised strength are difficult to obtain, and must be purchased at more than a proportionate increase of price. You cannot expect to get a gold ring for a brass price.

For many years it has been the rule in the United States that no opium shall be admitted containing less than 10 per cent. morphia. Whether or not this kind of regulation is applied to the importation of other drugs I cannot say, but of its beneficial effects there can be no two opinions. In the London and Liverpool markets can be purchased all kinds of drugs of all strengths. The manufacturers of extracts and active principles know too well what they are about, to purchase the qualities of real inferiority. What, then, becomes of them? They must be taken by the trader to retail, and they are retailed to, and swallowed by, the British public.

What can be more annoying to a medical man prescribing a medicine for a patient than to find a thing supplied destitute of therapeutical properties, or prescribing a blister for some urgent case and finding his efforts rendered perfectly nugatory. It is a grim and trite kind of joke to say men often die by the doctor, but let me ask you to whom the joke should apply—to the doctor who prescribes the right thing, or the man who supplies the wrong?

Can I place before you any more cogent reason why the practice of dealing in drugs of uncertain quality should be abandoned? Can I mention any weightier inducement which can sway honest men to voluntarily band together to offer to the public a reasonable guarantee of their integrity, and so separate them from the fraudulent members of the craft? I trust not; and if you will fully consider the advantages such a proceeding will bring you in all ways, if properly organized and carried out, I am sure it will not be long before you get together and establish an association as necessary as it will be useful, as highly entitled to consideration and esteem as any recognised profession. In fine let me sketch roughly a plan in which all earnest pharmacists

might join, by which benefit of the public and of the trade might be secured in the matter of drugs.

I would suggest that the Council of this association should frame a few rules and lay them before a general meeting; that they announce their willingness to form a branch association, consisting of pharmacologists only, a chief condition of membership being that the member subscribing to the rules and paying the yearly fee shall thereby undertake to sell drugs of genuine and standard quality only, and agree that if he be proved to have sold any of inferior quality after joining the Association that he can on judgment of the Council, confirmed by vote of general meeting, be expelled the Association, and that such expulsion be advertised in the public papers. That a chemist to the Association be appointed who shall be authorized to report upon any drugs which may be purchased in a recognised way in the shops of members, which on analysis may not come up to the official standard of the Association, which shall in some degree be regulated by the Pharmacopœia. That the Association publish a monthly minimum price-list showing the lowest possible prices at which drugs may be purchased of guaranteed purity. That this price list be for the guidance of members only, and for private circulation among members only. That a private list be kept by the Association of the names of firms known to manufacture or offer for sale drugs of inferior quality, or utterly destitute of therapeutical virtue.

I have no doubt many objections may be stated, and pungently stated, to the above rules, and that many additions might be made. One very possible objection which I might perhaps be permitted to notice beforehand is the restriction on free trading which such rules and such an association would exercise.

I am ready to maintain that free trade in drugs for the use of the public is not permissible in the way in which free trade in other articles of commerce is desirable. That this fact is generally recognised to a certain extent is patent by the monopoly granted to pharmacologists. But that the limit of the restriction should be the dealer himself is manifestly absurd. What earthly cause is there to prevent a man selling jalap containing 2 per cent. active principle in place of 12 per cent? It may be a fact that the less medicine the consumer takes the better, but this has nothing to do with the question as between buyer and seller; there is every reason that what is deemed desirable as a dose should be honestly supplied. A restriction such as the Association and the rules for similar ones to those I have had the honour to propose to you is not too severe a one under the circumstances. Drugs whose quality cannot be judged by appearance should in no case be sold but by analysis.

LEECHES, AND HOW I MANAGE THEM.

BY A COUNTRY CHEMIST.

DO you want to buy any leeches, master? No; but where do you procure them for sale? Such was the question and answer which recently occurred to the writer. The reply received was that they were procured from a large mere or tarn in the centre of Cheshire. The little ragged fellow, for such was my amateur leech merchant, said he waded about the margin of the lake, minus shoes and stockings, on a close warm day, when the leeches fastened on his ankles, and by this simple means he secured them. The lake in question is called Achmere or Lechmere, a corruption of Leechmere. Formerly large quantities of good medicinal leeches were captured in it, and sold to the surgeons and chemists of Cheshire; now, however, the trade has declined. Very few are caught, for the simple reason that sufficient purchasers cannot be found, or the supply might be considerably increased. I cannot detect much difference externally between these specimens and those procured on the Continent, except, perhaps, that they are much smaller.

There are two kinds of leeches recognised by dealers—namely, the green leech (*Sanguisuga officinalis*) and the speckled or brown leech (*S. medicinalis*). Our native species belongs to the latter. Sometimes it is difficult to

detect any characteristic difference between the green and speckled leeches, and by many eminent naturalists they are supposed to be one species. The former is a native of the South of Europe, and is frequently called the "Hungary Leech," from its being extensively exported from that country. The American pharmacists use a very distinct species (*S. decora*). Our official leeches may be distinguished by one having a spotted yellow belly, the other is not speckled, but of a greenish yellow.

Leeches are not now so much thought of as in the days of our forefathers. This probably is the reason why we find so little knowledge respecting their habits and employment amongst chemists. If they were more frequently called for by customers, so as to become a profitable branch of the trade, their use and habits would be more studied. The leech, as is well known, is employed only to subtract blood in some local part and in small quantities. The narrowest end or part contains the mouth, the broad and flat end is merely a sucker to hold on to the skin.

The mouth is a triangular aperture furnished with from seventy to ninety teeth, very minute certainly, but called teeth by naturalists. By means of these the skin is broken whilst a continual sawing-like motion is experienced when the creature is sucking up the blood. It is thought the mouth keeps open the wound whilst sucking, but this is only conjectural; probably it acts upon the same principle as a sponge. The physician when ordering his patient to apply leeches, should mark out the exact spot where they are to be placed with pen and ink, for sometimes ignorant persons, especially when applying them to the abdomen, allow them to wander



THE MOUTH
MAGNIFIED.

about and suck anywhere, but if the place is marked out they would be more careful. The proverbial impossibility of making a horse drink against its will applies equally to leeches. It is at times difficult to persuade them to bite: even when they are induced it is, perhaps, only for a few seconds, and they wander away again. This may arise from several causes. It may be the blood is so impure that directly it is tasted the leech refuses to suck any more; this, however, is seldom the cause. If the skin is at all unclean it is useless to apply them. The chemist who sells the leeches should be careful to inform the applicant of this fact; it will save much annoyance. The part should first be well sponged with warm water, then rubbed with a little milk. Sometimes it is well just to gently prick the part with a fine needle, or to rub a small quantity of blood over the skin. I have also seen milk and sugar used with good effect. In cold weather, before applying leeches, they should be placed in warm water about 75° Fahr.—if a table-spoonful of beer is mixed with the water all the better—then for a few minutes allow them to crawl about over a rough cloth or towel; they will afterwards generally bite very freely.

If they are too lively a good plan is to confine them beneath a wineglass until they have fastened on the skin. Many chemists recommend their customers to purchase leech glasses (tubes); I have found these useful when they are applied in the mouth, but I prefer to work without the tube when applying them to any other part of the body; a wineglass, which is found in almost every house, is all that is required. Persons unused to them do not know the difference between the head and tail, therefore in using the tubes they are apt to apply the tail end to the skin.

I know it is not an uncommon fraud to sell leeches as virgin or new leeches which have been previously used. Dr. Christison's directions for discovering this deception should be known by everybody. He says "the gorging of leeches is a more common fraud than the substitution of spurious species. They are known by being less velvety in their coat, less flat when pressed, and presenting a little tumour when squeezed betwixt the fingers from the head to the tail. Leeches which have been used are often sold for unused or virgin leeches. They are best known by putting them on a white cloth and dusting their forepart with finely powdered salt; in thirty-seconds a little blood will be omitted, but not a particle if the leech be quite fresh."

It is not a pleasant thought to fancy a leech is being applied to your skin, which has been sucking some patient in a fever ward of a London hospital.

Of course no reasonable person can deny that leeches, if healthy, can be used more than once; even Christison states he has used them three days in succession without impairing their activity by immersing them in a solution of sugar and water frequently changed. Directly after removing them from the skin they are commonly sprinkled with fine salt on a plate to cause them to disgorge the blood. To me this appears cruel, not only to watch the leech writhing in agony but to observe the skin wrinkled where the salt has touched. I just cover them with brown or raw sugar for a few minutes; afterwards it is well to pass them betwixt the finger and thumb holding it by the tail, then place them in water in which a very small quantity of sugar has been dissolved, and change often for the first week. Working men and others, to whom the expense of leeches is a consideration, should be instructed as above by the chemist when giving him the leeches; they may possibly be required again by his medical attendant, if so it will save him much expense. A good mode of testing the healthiness of leeches is to hold them for a minute or so in the palm of the hand. The best and healthiest specimens will immediately contract into a roundish ball-like form; these seldom fail to give satisfaction.

Frequently it is desirable to draw more blood after removing the leech. To do so, hot flannels or linen rags heated and held on the part answer admirably. I have invariably found this the most satisfactory method, far more so than applying hot bran or bread poultices. One thing should not be overlooked, the difficulty in stopping the flow of blood. This seems never to enter the mind of most individuals, yet there are patients met with in every practitioner's experience in whom it is exceedingly difficult to stop bleeding. If a case like this should be suspected when applying the leech, place it if possible and convenient, over a bone, where pressure from the finger will often stop the bleeding. If this will not succeed, moistened matico leaves are useful, or linen rags soaked in a strong solution of alum. When the patient is strong and not suffering from any debilitating illness, the loss of a little blood will not be felt, but in the case of a weak child, or a person reduced by disease, it is often important to stay the flow of blood immediately, or they might be so weakened by its loss as to cause fatal results.

Now a word on keeping leeches. I have heard many of my drug friends complain sorely about the loss from this source. To preserve them without loss and in a healthy state we should strive as closely as possible, to imitate nature. How can they be expected to live in a fancy glass jar, exposed in a window, beneath the heat of a summer's sun? When I first entered into business, I ordered from a London firm, a hundred speckled Hambro' leeches, which I placed in a large glass globe, but although they were apparently healthy when received, they soon sickened and died. I do not think I sold a single dozen out of the whole lot. I thought this sort of thing would never pay, so I procured a fancy jar, or aquarium, made on purpose, and advertised extensively. It was to be stocked with *Valisneria spiralis* and other water weeds, water snails, sand at the bottom, etc., but I was still far from successful. At last I became so disheartened that I gave up keeping leeches altogether. I had no sooner so resolved, then naturally the demand increased, and in deference to the wishes of a medical practitioner in the neighbourhood, I decided to give the leech trade one more trial. I purchased a large black earthenware jar, with a wide mouth, glazed inside, such as is used by frugal housewives as a pickle jar, oily mine will hold nearly two gallons of water. I place at the bottom a layer an inch in thickness, of large pebbles and sand well washed, then I fill the jar about two-thirds with water, hard or spring water does not answer so well as rain water. I change the water on an average every fortnight, in the winter season once a month is sufficient, for then the leeches are torpid; I never allow the water to freeze, although it frequently reaches as low as 40° Fahr. The jar is kept in a cool place. I now seldom lose any of my leeches, if the consignment is healthy when received.

I believe the chief cause of failure is exposing them too freely to the light, which excites them. In their native habitat, they live for the greater part of their lives beneath the mud at the bottom of the lakes, where they lie in a semi-torpid state; in a dark jar, or where the light is kept from them, they are also semi-torpid.

NORTHERN. LIGHTS.

OUR sluggish southern souls have been somewhat startled of late years by the rapid strides into trade celebrity of Messrs. Goodall, Backhouse, and Co., of Leeds. Well known in Yorkshire and the adjacent counties, this house had for many years carried on a steady prosperous wholesale trade, but of a somewhat local character. Suddenly they seemed to resolve on a more universal style of business, and the result of their enterprise has been most remarkable. Their name and their productions are now famous from one end of the world to the other. And quite lately they have completed in the centre of Leeds, and opposite their old establishment, a building, which for size and completeness of detail, is not surpassed, we believe, and we doubt if it is equalled by any wholesale drug store in Great Britain. The drawing which accompanies this notice gives a very correct idea of the outside of these handsome premises.

During our recent visit to Bradford we took the opportunity of paying a visit to Messrs. Goodall, Backhouse, and Co. at Leeds, and were very politely shown over the whole building. We have not a very clear remembrance of the geographical order of the various departments, but we still retain a sense of the big scale on which everything seemed to have been framed, and of the activity which pervaded the whole establishment. We remember, for instance, winding about a mighty cellar, amid a lot of oil cisterns as large as cottages; seeing bottle-washing by steam; paste-making by steam; an extensive laboratory; everything worked by steam power; a splendid large show-room for druggists' sundries; room after room for the various departments; every now and then a hive of girls putting up in packets such articles as baking powder, epsom salts, carbonate of soda, quinine wine, and most interesting of all the celebrated Yorkshire relish. This Yorkshire relish has, we imagine, been the keystone of the firm's success. They introduced it only eight years ago, and verily he who runs may read the reasons for the wonderful sale it has attained—over 300,000 bottles per month we are told!—a figure which we should judge justifies Messrs. Goodall, Backhouse, and Co., in regarding themselves as the largest manufacturers of sauce in the world. They made a first rate article, hit on a good name, and a striking trade mark, offered it to the world for sixpence a bottle—a startling revolution in the sauce trade—and then advertised it fearlessly and freely. That they can continue to supply it for the same price, and just the same in quality now that bottles are becoming chemical curiosities, is proof that the margin left previously was sufficiently remunerative.

Big as this place is, it is not big enough to allow of the manufacture of the Yorkshire relish being carried on on the premises. It is made in some other part of the town and transported in casks to Boar-lane. Here it is hoisted up to the top of the building, and received in a room fitted up with tanks, capable of accommodating about 10,000 gallons. Thence it is launched into a gigantic cistern or the floor below, in which a steam-worked fan keeps it mixed. It is allowed to run from this into a sort of aqueduct, on both sides of which are several spouts, and a girl sits in front of each with a supply of bottles, which are then filled with the piquantly aromatic relish. They bottle at this machine at the rate of 80 gross per day, and then can hardly keep up with the orders. A large store room fitted up with shelves to contain some hundreds of grosses is the only bare looking place in this establishment, for hitherto the bottlers have only just managed to keep pace with the packers.

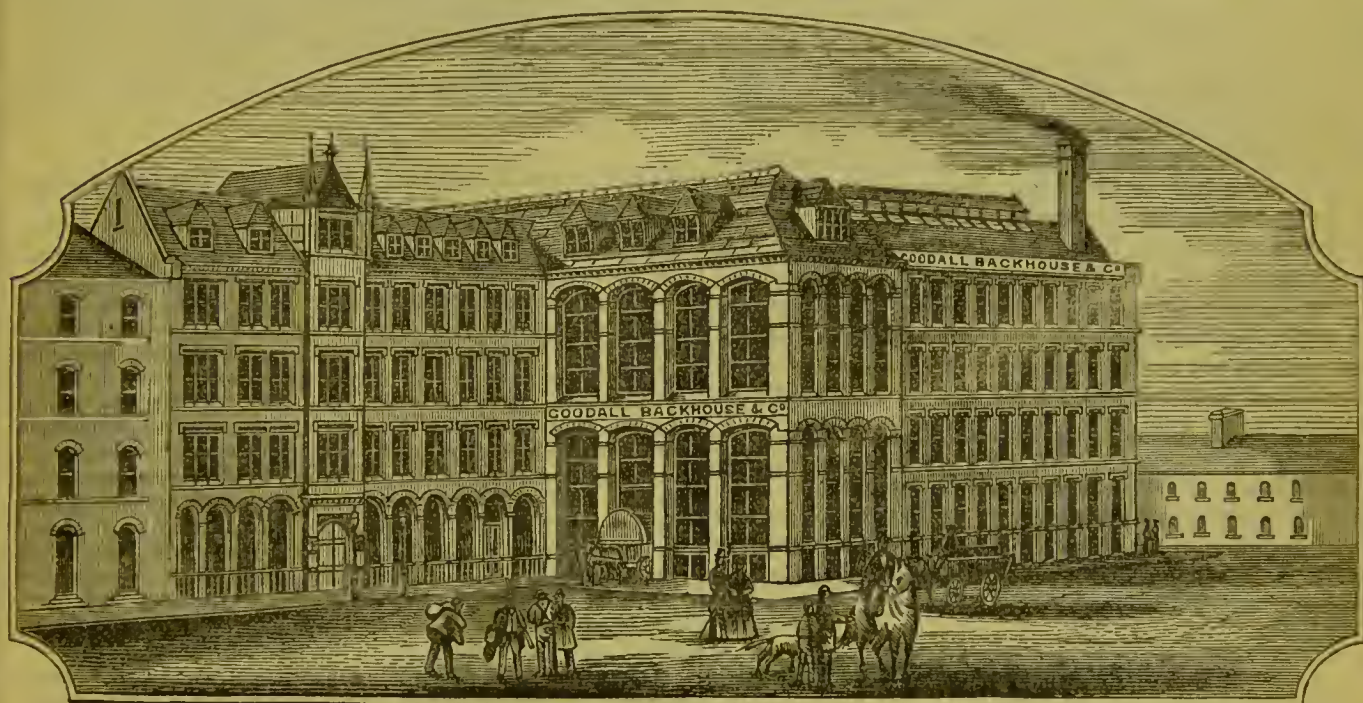
Mr. Powell and Mr. Backhouse, the present members of the firm, are both comparatively young, and the energy they have already spent has in no degree exhausted them. The ability and spirit they have displayed will no doubt characterize their future transactions in as marked a degree as heretofore. We conclude with a few technical details of the building, which may be of interest to readers who are familiar with bricks and mortar.

The basement covers an area of 1,057 superficial yards, is specially adapted for heavy storage, and is paved with Bradford stone, and well lighted with vertical and horizontal lights, fixed in iron frames, in the causeway. The engine (over eight horse-power) is placed under the covered shed,

and made fireproof. It drives the various machinery in connection with the laboratories, and works the lift, which runs from the basement floor to the sixth floor. The superficial area of the lift is 32 feet. The ground floor covers an area of 938 superficial yards. The loading dock is placed in the centre warehouse, so that the work may be carried on under cover; and it is so arranged that the carts are run in from the street level. The sixth floor is covered with a Mansard roof, so as to utilize the whole of the space. It is lighted with dormers and skylights. The whole of the building is heated with hot water supplied from the boiler. The floors are carried with cast-iron columns, beams, joists, and 2½-inch flooring boards, all tongued together with iron, and constructed to sustain a weight of five hundred-weight to the superficial foot. The external wall of the building

white Aeroliniums add much to their beauty. The white Helichrysms can be dyed a brilliant purple or scarlet with "Judson's Dyes," and exquisite bouquets can easily be manufactured. These "everlasting" flowers should be gathered as soon as the outer leaves open. Tie them up in bundles as you pick them, and hang up, flowers downwards, to dry. Treated in this way, the stems are straight and more easily used. They can be hung to dry in one's chamber, not requiring a darkened place. Most of these flowers are allowed to remain too long upon the bushes, and their beauty is spoiled. As they become dusty under the frequent sweepings of carpets, we dip them in cold water; their petals close entirely. We dip the grasses also, to cleanse them, else they will acquire a dingy hue.

Many persons like crystallized grasses. These are easily



is constructed with brick and stone dressings. The portion over the main entrance is carried on corbels, with cusped lights over, with angle pinnacles supported on carved corbels. The centre warehouse is constructed with lofty brick piers and stone arches running the height of two floors, for the admission of light. Lavatories and offices are arranged for the several departments with all the modern improvements, of plain and substantial character. A stone staircase, which is fireproof, is placed at the extremity of the end wing for the service of the workpeople. The height of the building from the basement to the ridge of the roof is 76 feet, and the chimney from the engine house is 98 feet high. Mr. William Bakewell, of Leeds, was the architect.

PRESERVING GRASSES, FERNS, AND FLOWERS.

THE following details in the art of preserving flowers, etc., are given by a lady correspondent of the *Villa Gardener*:—Grasses should be gathered early in July, if we desire them to retain their bright hues without the aid of art. Gathered then, tied up in large bunches, and hung away in a dark closet, they come forth at our bidding, fresh and green as when plucked. Now, by brook-side or in shady places, we can find graceful grasses, which will prove additions to our winter bouquets, but they will lose their colouring, and require a dip into "Judson's Green Dye." Dry them again, and they will last for years. Wild oats, feathery grass, and all their various species are very ornamental in winter, and, mingled with the everlasting flowers—Aerolinium, Xeranthemum, and the white, yellow, and crimson Helichrysms—they vie with their more perishable sisters, whose glories are on the wane. We have just arranged two small vases for the coming winter. The brilliant pink and

made by dissolving one pound of alum in one quart of boiling water, suspending the grasses just over the steam—not to touch the water—and as it cools, the crystals gather. Grasses need not be dyed before they are crystallized. A few of them mingled with the green grasses and brilliant-hued flowers light up well.

Ferns are much sought after for floral decorations. Their feathery plumes, pinnated leaves, and graceful forms are very beautiful. They differ from the grasses, for those gathered late in autumn retain their colours better than the fresh ferns of June. The sap has hardened in their leaves. We have gathered them late in November, when they were surrounded by snow, and they have kept green all winter. The running fern is a lovely decoration for walls and pictures. Its flowers add much to its grace and beauty, but it fades quickly, and by Christmas but a faint green remains. Dip them in "Judson's Dye" (following the directions given on the bottle for dyeing ribbons) and you will keep their lovely colour. After they have been thoroughly pressed in heavy books, then dye them, spread on paper to dry in the shade, and press again. Thus treated, they will last for years. Maidenhair, the most graceful of our ferns, soon loses its colour; but dyed, it is an addition to every collection of grasses or ferns.

Parsley fern is very beautiful; its soft, feathery leaves are always sought after. These, if gathered late in the autumn, will retain their colour much better. The male fern, with its stiff stems, if well pressed, looks beautiful. We mingle it with the many colored leaves of autumn, or we pin it to the wall-paper, around pictures, or over lace or muslin curtains, and its effects are charming.

Bunches of dyed mosses are to be purchased of all seedsmen in the cities; we dwellers in villages cannot avail ourselves of them if we would; but we can make them even prettier than those exposed for sale. Gather the mosses; pick out all the debris, cleanse from dirt, and dry in the sun,

then dip into "Judson's Dye," spread on papers to dry by fire or sunlight. We gathered last year a very finely-fibred moss, dyed in a lovely green, and saved some of the original colour to mingle its brown hues with it. Then we took the "hoops" from an old skirt, tied them together, and on the circlet tied wreaths, which city friends said "surpassed those displayed at the shops."



KIRBY'S PHOSPHORUS PILULES.

WE have seldom seen a better specimen of elegant pharmacy of English manufacture than the really valuable "pearl-coated phosphorus pilules" introduced by Messrs. Kirby and Co., of Newman-street, London. It is extremely probable that phosphorus is a most important remedy. According to Dr. Pereira it possesses remarkable stimulating properties, especially on the nervous system. The difficulty of administering it in its elementary state has been conquered by Dr. Kirby, who has devised a process whereby it can be presented in small pills. These pills are of a moderate consistence, but perfectly retain their shape. Each contains the 1-33rd of a grain of phosphorus. They are rendered tasteless, and the phosphorus preserved from oxidation by a pearly covering, but on cutting it is instantly recognisable, both by odour and by placing the pill in a flame. Messrs. Kirby and Co. prepare the pills either with phosphorus alone, or in combination with nuxvomica or quinine, or with both. Their product is certainly one which demands the attention of both the medical and pharmaceutical professions.

LORIMER'S PEPSINE SAUCE.

MESSRS. LORIMER AND MILNE, manufacturing chemists, of Holloway-road, London, whose preparations of pepsine are in themselves worthy of notice, have conceived the happy thought of introducing a "Pepsine Sauce." Both as a sauce, and as a vehicle for the administration of pepsine, this idea seems to us excellent. Allowing for a fair degree of exaggeration, which has naturally resulted from the theoretical beauty of pepsine as an aid to digestion, there is no doubt that the drug does possess great virtue in this respect, and we have convinced ourselves that Messrs. Lorimer and Milne's sauce contains a fair proportion of the product. Nothing can be easier or more natural than to take pepsine in this form, and we may add that the sauce is also of an agreeable and piquant flavour. Manifestly it is especially adapted for chemists' sale, and we have no doubt the trade will take it up as it deserves.

GELLÉ FRÈRES' PERFUMERY.

WE have received from Messrs. Gellé Frères, of Paris, a Show Card Almanac for 1874, which is quite remarkable for artistic beauty, both as regards colour and design. Along with this they have submitted a few samples of their products, which indeed merit the attention of buyers of high-class perfumery. We may especially refer to their boxes of toilet luxuries, in which are provided the various toilet glycerine preparations for which the house is famous. The soaps manufactured by Messrs. Gellé Frères are particularly pure and pleasant to use, while their perfumes are deservedly famous not only in Paris (which of itself is much to say) but also throughout the world.



CONDUCTED BY RICHARD J. MOSS, F.C.S.

WE have again to announce an exercise on the detection of a poison. The substance to be examined shall consist of a mixture of flour and linseed meal, and may contain a small quantity of a well-known metallic poison. The mixture is to be subjected to such an examination as is required to detect the suspected poison.

Students who wish to compete should send us their names and addresses before the 20th inst. On the 25th we shall forward the samples.

Students' papers will be received up to the 15th of the following month.

ANSWERS.

The mixture, which was the subject of our last toxicological exercise, contained 4 per cent. of lead acetate. This announcement will doubtless surprise a good many of our contributors. They must not suppose that our sole object was to puzzle them as much as possible, as might appear from the annexed list, in which it may be seen that, with a few exceptions, the marks obtained are far below the average. We wished to impress upon their minds the important facts which the previous exercise was intended to illustrate, and to which we drew their attention in commenting upon it. Considering the greater difficulties which would be encountered in the detection of lead acetate, a larger percentage of the poisonous salt was employed than we had used on former occasions. It would appear, nevertheless, that even 4 per cent. proved too small a quantity for most of our analysts. We hope that those who failed this time will not be discouraged, for it must be admitted that the problem to be solved was not a very easy one. The next analysis will give them a good opportunity for acquiring fresh courage.

It will doubtless be remembered that in the September number we drew attention to the fact that one of the organic constituents of the powder subjected to analysis—alumen—possessed the property of forming insoluble compounds with many metallic salts, and that this was the reason why it is so frequently recommended as an antidote in the form of white of egg. The present exercise was intended to afford an additional illustration of this fact. It must not be supposed that the reactions observed in test tubes are always faithful representations of those which take place in the human stomach, as is too frequently taken for granted. Chemical theories of the action of antidotes or indeed of physiological phenomena in general, are only worthy of confidence when supported by the evidence of direct experiment. This is the case with the theory in question.

The first point to be noticed in this exercise was the detection of the lead. For reasons already referred to it was only to be found in small quantity in the aqueous extract of the powder. But when the powder was treated with dilute hydrochloric, or dilute nitric acid, a solution was obtained in which lead could be detected without difficulty. We find the supposition entertained that solutions which do not give a precipitate with hydrochloric acid are free from lead. This is an erroneous idea. Plumbic chloride is far from being insoluble in water; one fluid ounce of water at the ordinary temperature dissolves three grains of this salt, and warm water dissolves it much more abundantly. Dilute hydrochloric acid is not so good a solvent for plumbic chloride as water, but concentrated hydrochloric acid dissolves it even more readily than water, which precipitates the salt from its acid solution. It is important to remember these facts in testing for lead. Another matter in connection with the detection of lead deserves consideration. When hydrogen monosulphide is passed into a solution of a lead salt, containing hydrochloric acid, the precipitate sometimes appears at first red or reddish-brown. This is usually the case when the quantity of free hydrochloric acid present is comparatively large. The red colour of the precipitate is due to the partial precipitation of the chlorido in conjunction with

tho sulphide of lead. To avoid being misled by this and similar results, it is necessary to pass hydrogen monosulphide into the solution under examination until the latter smells strongly of the gas, after it has been well shaken and slightly warmed.

The detection of the acidulous radical in this case appears to have been found difficult. It must be observed, however, that the odour of the mixture was unmistakeable, and was so marked, that we had expected it to lead to an easy detection of the poison; an expectation which was only partially realized. On warming some of the powder with dilute sulphuric acid and alcohol the characteristic odour of acetic acid was easily perceived. The fact that cold water dissolved a portion of the lead salt indicated the presence of a soluble salt. And if the aqueous solution was concentrated by evaporation the ferric chloride reaction gave further evidence of the presence of the acetic radical.

The next exercise will not be found so difficult as this one has been, and we hope to have a more general contest for the prizes.

PRIZES.

The First Prize for the detection of the poison in the mixture has been awarded to

H. J. JACKSON (H. J. J.), 11, Prince-street, Bridlington Quay.

The second prize has been awarded to
J. C. THRESH (England), Dukinfield.

Marks awarded for Analyses.

H. J. J. (1st prize)	..	..	..	..	..	..	..	..	100
England (2nd prize)	..	..	..	..	..	..	..	..	98
F. A. C.	..	..	..	..	..	..	..	..	95
W. A. B.	..	..	..	..	..	..	..	..	80
C. W. Halliday	..	..	..	..	..	..	..	..	0
C. J. B.	..	..	..	..	..	..	..	..	0
S. C.	..	..	..	..	..	..	..	..	0
H. P. Corke	..	..	..	..	..	..	..	..	0
D.	..	..	..	..	..	..	..	..	0
Gradatim Excelsior	..	..	..	..	..	..	..	..	0
C. F. P.	..	..	..	..	..	..	..	..	0
Scotland	..	..	..	..	..	..	..	..	0
C. E. Waddington	..	..	..	..	..	..	..	..	0
Wales.	..	..	..	..	..	..	..	..	0

TO CORRESPONDENTS.

*. All Communications should include the names and addresses of the writers.

Prizes.—The students to whom prizes are awarded are requested to write at once to the publisher naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as a second prize.

W. A. B.—We recommend to your perusal our remark in the September number about the insoluble compounds which albumen forms with some metallic salts.

C. W. Halliday.—You appear to have employed separate portions of the solution for each group re-agent. This is not the right way to proceed. The solution to which hydrochloric acid has been added, or the filtrate from the precipitate produced by this re-agent, should be employed for treatment with hydrogen monosulphide, and so on.

C. J. B.—It is hard to understand why you failed to get a precipitate with hydrogen monosulphide in the hydrochloric acid solution. Possibly you did not pass the gas through the solution for a sufficient time.

S. C.—You are not expected to determine the percentage of the poison in the mixture. You will find you have quite enough to do without making a quantitative determination. We usually mention the quantity afterwards, in order that students may know what amount of poisonous salt they had to deal with. The form in which you describe the analysis will do very well, but you might take a little more trouble with it. We hope you will be more successful the next time.

H. P. Corke.—Your statement that the powder was "highly nutritious" was rather unexpected. If you try a diet of linseed-meal containing 4 per cent. of sugar of lead for a week or so, you will probably see cause for a change of opinion.

D.—The colour of the hydrogen monosulphide led you astray; on this point please note our remarks above. If you can repeat the Marsh's test, omitting the organic powder, you had better do so, as it would appear that your re-agents are not sufficiently pure for this very delicate test.

C. F. P.—It was unfortunate that you could not commence operations at once on receipt of the powder, as the time which elapsed rendered this analysis more difficult.

Scotland.—We are sorry for the disappointment you sustained by the miscarriage of your former paper. We do not appear to have received it.

C. E. Waddington.—You would do well to confirm the remarks which we make about the solubility of plumbic chloride by trying the experiments for yourself.

Wales.—When we award prizes for brevity you will certainly have a good chance. You can scarcely have been serious in your statement that a carbonate was present because the hydrochloric acid solution effervesced on the addition of acetic acid. Your hydrochloric acid appears to have been endowed with some miraculous properties, since you appear to have dissolved the powder in it.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

A CONVERSAZIONE of the members of the above Society and their friends was held in the Music Hall, Sheffield, on Friday, October 24th. Many valuable and interesting objects were lent for exhibition by various sympathizers with the object of the Association. A splendid case, contributed by Messrs. Southall, Son, and Dymond (Birmingham), justly gained much approbation, the samples of many pharmaco-chemical objects being especially worthy of notice.

Along with a quantity of novelties kindly lent by Messrs. Maw, Son, and Thompson, a "Pindar's" pill machine caused much amusement to the ladies.

The other firms which had contributed to the exhibition were Messrs. Hearon, Squire, and Francis; Messrs. Hodgkinson, Stead, and Treacher; The Pharmaceutical Society; Messrs. Cubley and Preston (Sheffield); Mr. Ewing, Curator, Botanical Society's Gardens (Sheffield); Mr. W. V. Radley (Sheffield); Mr. T. W. Hime, M.B., L.R.C.S.; Mr. W. Ward, F.C.S. (President, Sheffield Association); Mr. E. Birks, F.L.S.; Mr. Ellnor (Sheffield); Mr. W. Jervis (Sheffield); Mr. J. H. D. Jeckinson (Sheffield); Mr. E. Wilson (Local Secretary); H. Merryweather, Esq., M.D., M.R.C.S., etc., etc.

During the evening the proceedings were enlivened from time to time by music, and also an opportunity was found for the delivery of a brief address by the President, Mr. W. Ward, F.C.S. Afterwards a short but highly interesting lecture was delivered by Mr. A. H. Allen, F.C.S. (borough analyst) on "Spiritualism," which was profusely illustrated by experiments, causing much amusement. Later on dancing commenced, which, meeting with hearty appreciation, was sustained till a late hour.

UNUSUAL DOSES IN PRESCRIPTIONS.

IN order to carry into effect the resolutions passed by the British Pharmaceutical Conference at Bradford, the honorary secretary (Professor Atfield) has lately addressed a copy of those resolutions with the accompanying letter to the presidents and officers of the medical corporations and schools, and to the chief prescribers:—

SIR,—At the tenth annual meeting of the members of the British Pharmaceutical Conference, held at Bradford during the third week of September, 1873, the important subject of unusual doses in prescriptions, and the position which pharmacists should occupy in relation thereto, was carefully and patiently discussed in its pharmaceutical bearings by members from all parts of the country. By an "unusual dose" was understood a large quantity of patent medicine designedly prescribed in rare cases, but which, as a rule, would not be dispensed by the pharmacist without hesitation. The result of the debate was the unanimous adoption of a series of resolutions embracing what was believed to be the essentials of safe practice in the matter. Further, the President of the Conference was requested to bring the resolutions under the notice of the presidents of the medical colleges and corporations, and other leading medical authorities, and the medical journals, in the hope that the action taken would be approved and supported by physicians and medical practitioners generally. The proposal is that the prescriber should call attention to an unusual dose by adding, on the same line, his bracketed initials, thus (F. W.). A similar plan is already adopted on the Continent, and indeed in some countries is enforced by law.

On the next page is a copy of the resolutions; I trust that they will meet with your individual approval, and that you will contribute your influence in giving them wide publicity amongst the members of the medical profession.

I am, Sir, yours faithfully,

THOMAS B. GROVES, President.

Provincial Reports.

MANCHESTER.

CHEMISTS' AND DRUGGISTS' ASSOCIATION.

INAUGURAL MEETING OF THE WINTER SESSION, SOIREE, AND EXHIBITION.

A MEETING of an exceedingly interesting character, well calculated to increase the popularity of this Association, and at the same time to deepen the interest of its members in scientific pursuits, and to widen their knowledge of the many practical applications of physical science, was held in the Memorial Hall, Albert-square, on Friday evening, November 7th. The attendance was large and thoroughly representative, including nearly all the members and associates, many medical men, professional chemists, and others interested in the objects of the Association.

The Exhibition was opened in the large hall at half-past six o'clock. Tea was served in an adjoining room at seven; and at half-past eight the chair was taken by the President, Mr. W. SCOTT BROWN.

The only formal business was the election of twenty-five associates. The President then delivered his opening address, in which he gave an interesting sketch of the work of the Association during the past five years, and congratulated the members on its progress in respect to the accomplishment of the objects which its promoters had set before themselves at its commencement. They had now reading-room, lecture room, fair library, good museum, and most excellent and complete courses of lectures, and they felt great satisfaction in having established all those by their own unaided efforts. They earnestly hoped that the chemists of Manchester and the surrounding district would join the Association in such number as not only to maintain, but also to extend its usefulness.

Mr. J. T. SLUGO, F.R.A.S., then briefly addressed the meeting. He congratulated the members on the variety and interest of the Exhibition—alluding especially to the microscopes, and the immense importance of those instruments in the study of chemistry, pharmacy, and medicine.

Later in the evening Mr. LOUIS SIEBOLD delivered a lecture on "Dialysis, and its Applications to Pharmacy." Mr. Siebold's experiments were of a most striking and convincing nature, showing both the theory and practical application of the process. The latter was demonstrated by separating the uniconic acid from a mixture of mucilage, extract of liquorice, and a trace of tincture of opium. The lecturer said that dialysis afforded to the pharmaceutical student a wide field for original research in the isolation of many alkaloids and active principles at present involved in much obscurity, and the very existence of which was sometimes doubted.

In connection with Messrs. Howards' contribution of sample bottles of sulphate of cinchonidine for distribution at the meeting, Mr. BENDER gave a short explanatory lecture on this substance, describing its physical and chemical properties, the tests by which its substitution for, or admixture with, quinine may be detected, and detailing the opinions expressed by members of the Royal Commission appointed by the Indian Government to inquire into its medicinal effects. The importance of giving it a fair trial in this country was urged, as, should the results obtained in India be confirmed at home, a most important addition to the materia medica would be gained; one especially to be appreciated at a time when the great demand for quinine had so enhanced its price, and when there seemed every probability of an unlimited supply of cinchonidine, obtained from barks grown in the Indian plantations.

Votes of thanks were passed to the exhibitors, the medical profession for their presence and support, the lecturers of the evening, and the President for his address.

The following were the most important contributions to the Exhibition:—

Messrs. HOWARDS and SONS (London).—Fine specimens of cinchona barks grown in India; and 200 sample bottles of sulphate of cinchonidine.

Messrs. HOPKIN and WILLIAMS (London).—Rare chemicals. Messrs. JOHNSON and MATTHEY (London).—A collection of platinum apparatus, and a very beautiful series of platino-cyanides and other chemicals not commonly met with by pharmaceutical students.

Messrs. SOUTHALL, SON, and DYMOND (Birmingham).—A fine display of chemicals, pharmaceutical preparations, and materia medica specimens, true citrate of magnesia, &c.

Messrs. POTHS and SEMPLE (London).—The contribution of this firm was very varied and interesting, consisting mainly of German pharmaceutical appliances, many of them little known, and therefore little used in this country. The many applications of transparent horn in the construction of scale pans, dishes, strainers, pill silverers, spatulas, etc., etc., were remarkable. The hardness, durability, lightness, beauty, and non-metallic nature of this substance admirably adapting it for those purposes. Cardboard boxes, of exquisite finish and almost endless diversity of form, enamelled labelled bottles, delicate balances, and an array of German productions too numerous to mention. Mr. Poths, an examined chemist of England and Germany, came from London to be present at the meeting, and was most courteous and obliging to the many inquirers respecting the nature and uses of the appliances exhibited.

Mr. P. SPENCE (Manchester).—A large case of specimens, illustrating his patent processes for the manufacture of alum.

Messrs. F. C. CALVERT and Co. (Manchester).—Carbolic acid, preparations of ditto, and apparatus for diffusing its vapour as a disinfectant.

Messrs. C. LOWE and Co.—Specimens of crystal carbolic acid.

Messrs. J. WOOLLEY, SONS, and Co. (Manchester).—An extensive collection of chemical apparatus, furnaces, drying closets, microscopes, etc.

Messrs. MOTTERSHEAD and Co. (Manchester).—English, German, and French batteries for medical purposes, electric bells and fire alarms, revolving stereoscopes, graphoscopes, and microscopes, slides for illustrating Stoddart's micro-chemical test for quinine, etc., etc.

Messrs. BAILEY and Co. (Salford).—Electric bells and patent indicators for use on board ship, a clock "to watch the watchman," etc.

The MIDDLETON BOTANICAL SOCIETY.—A collection of rare indigenous plants, and two copies of a very valuable work, "Flora Londinensis," by W. Curtis, Demonstrator to the Company of Apothecaries, published 1777, consisting of large coloured plates of all plants growing in the neighbourhood of London, with descriptive letter-press.

Mr. COCKSHOT (Manchester).—A selection from his fine herbarium of British plants.

Mr. LOUIS SIEBOLD.—*Herbarium pharmaceuticum*, arranged for medical and pharmaceutical students.

Mr. JOHNSON (Bury New Road, Manchester).—A very valuable microscope, and a remarkably choice collection of objects, to the exhibition of which Mr. Johnson most kindly devoted the whole evening.

Mr. LEECH (Lower Burghton).—A polariscope and objects, constructed by himself.

Professor ATTRFIELD.—A case of models of gems, showing their crystalline form and colour.

Mr. GOODWYN MUMBRAY (Richmond).—A very interesting series of diagrams of microscopical objects.

Mr. ROBINSON (Pendleton).—Microscope and objects.

Mr. W. S. BROWN (Manchester).—A number of valuable illustrated botanical books.

Messrs. PAYNE and CHAPMAN (Manchester).—Revolving stereoscopes and graphoscopes.

Messrs. KAY BROTHERS (Stockport).—Specimens of their new patent soda-water bottle, percolators, etc.

The BRITISH PHARMACEUTICAL CONFERENCE.—An album of photographs of members of the American Pharmaceutical Association.

Messrs. ZIMMERMANN (London).—Wine-testing apparatus, etc.

Mr. HUGHES (Manchester).—An improved pill machine.

The ANILINE COMPANY (Manchester).—Specimens illustrating their manufactures.

Mr. WARWICK BROOKES (Manchester).—A series of most effective photographic studies.

Mr. W. DARLING (Manchester).—Specimens of minerals, etc.

Mr. CLARK (Salford).—An improved compound screw tincture press, affording a means of exerting enormous pressure, and appearing to offer many advantages over the press commonly used by pharmacists.

Mr. H. G. MUMFORD (Higher Bronghton).—Gyroscopes, etc.

Messrs. ALLEN HARRISON and Co. (Manchester).—Still, and models of apparatus connected therewith.

CHEMISTS' ASSISTANTS' ASSOCIATION.

THE third annual meeting of the above Association was held in the class-room of the Manchester Chemists' and Druggists' Association, on Wednesday evening, the 15th ult., the President, Mr. WILLIAM LANE, in the chair.

The Secretary, Mr. A. J. PIDD, read the report of the last session which congratulated the members upon the success of the past session, at the same time remarking that the attendance was not what it should have been in an important city like Manchester, although there was a decided improvement. The number of enrolled members was forty-eight; showing an increase on preceding sessions. The Treasurer's statement showed a balance in hand of £1 5s. 8½d."

The CHAIRMAN moved the adoption of the report, in doing which he said that the kindness shown by the Chemists' and Druggists' Association, in placing their rooms at the disposal of this Association, demanded the warmest thanks of the members. He also drew attention to the courses of lectures arranged for the benefit of pharmaceutical students of Manchester and neighbourhood, which he felt sure would prove in the future, as it had done in the past, of the greatest use to those students preparing for examination.

Mr. HEDLEY expressed much pleasure in seconding the adoption of the report, which was carried unanimously.

The election of officers for the ensuing session took place with the following result:—President—Mr. William Lane re-elected; Vice-President—Mr. G. W. Booth; Secretary and Treasurer, Mr. A. J. Pidd, re-elected. Committee—Messrs. Bathe, Dodge, Hedley, Hodgson, Hughes, and Sanders.

The first ordinary meeting of the session was held on Monday evening, Oct. 27th. The President, Mr. William Lane, read an able and interesting paper "On Opium." After an animated discussion, a hearty vote of thanks was awarded to Mr. Lane for his exhaustive treatment of the subject. Fifteen gentlemen were elected new members of the Association. The meeting was very well attended.

GLASGOW.

CHEMISTS' AND DRUGGISTS' ASSOCIATION.

THE second general meeting of the Association was held in Anderson's University, on Wednesday, 29th October, at 9 p.m. Mr. JOHN CURRIE, President, in the chair. The attendance was remarkably good.

Preliminary business being over, Dr. A. WOOD SMITH, Glasgow, delivered an able and very interesting lecture on "The Circulation of the Blood," illustrated both by means of diagrams and microscopes. Before closing, the lecturer gave a short sketch of the life of Harvey, the discoverer of the circulation of the blood.

On resuming his seat, the lecturer was accorded a most hearty vote of thanks, as were also Drs. Gemmell and Oliver, who assisted the lecturer with the microscopes.

The secretary drew the attention of the junior members to a note which he had received from Prof. Thorpe, asking if the hour from 4 to 5 p.m. would suit those intending to join his chemistry class, as it was the desire of the medical students that it should be held at that hour. This being agreed upon the meeting dissolved.

LEEDS.

THE eleventh annual meeting of the Leeds Chemists' Association was held on the 15th of October; Mr. E. Brown, the president, in the chair. The report congratulated the members on the position of the Association, both numerically and financially. It numbers 34 members and 47 associates. They finished their year with a balance of £15. It went on to record the accomplishments of the past session, and gave particulars of the chemical and botanical classes for the ensuing year.

The following gentlemen were elected officers of the Association for the coming year:—

President, Mr. F. Reynolds; Vice-President, Mr. S. Taylor; Honorary Secretary, Mr. J. W. Longley; Librarian, Mr. T. Wilson; Sub-Librarian, Mr. E. O. Brown; Curator, Mr. Payne. Committee—Messrs. T. B. Stead, E. Brown, E. Yewdall, Richard Reynolds, William Ward, and William Smeeton.

Some votes of thanks to the retiring officers closed the proceedings.

NORTHAMPTON.

THE second annual report of the Northampton Pharmaceutical Association has reached us, from which we learn that for an expenditure of about £10, added to much free aid, excellent work had been accomplished. Classes in Botany, Chemistry, Materia Medica, Pharmacy, and Prescriptions had been conducted through the winter session with the usual large attendance—averaging ten at each class—great interest being shown in the various subjects, as may be seen from the fact that four members had passed the Minor, and five the Preliminary Examination, during the year.

The Association issues a really excellent programme of courses of lectures for the ensuing session, each course being conducted by an amateur professor, at no expense to the members. An indication of the business-like manner in which this Association conducts its financial affairs is found in the item, "Interest 1s. 3½d.," which occurs on the credit side of their statement.

CHEMICAL ANALYSIS.*

WE have bestowed more than a passing glance on this book, and find a great deal to admire in its pages, but before we speak much of admiration we are inclined to express some censure on its title-page, which, as it seems to us, is calculated to mislead confiding friends of "artizans and students in public and other schools." We know how marvellously clever these gentlemen have become within the past generation; but we think, nevertheless, that this is hardly the style of book best adapted for them. In the first place, we have thirty pages devoted to a description of the balance and weights, the methods of adjusting and testing them, and to the operation of weighing. We ask any competent person to peruse these pages, and then judge how many artizans and schoolboys are likely to understand the greater part of it, or more practically, how many are likely to have liberty to make practical use of the glib directions for dealing with so expensive an instrument. Disregarding the greater portion of the book, we glance from this point of view over the article on water analysis, and find that about thirty-five pages are devoted to the subject, of which no less than sixteen are occupied with a description of Frankland and Armstrong's process for estimating organic carbon and nitrogen in water. If we supposed we should ever have to supervise a schoolboy or artisan while battling with the difficulties of this process, we confess we should for ever flee the shrine of chemistry. The author gives about five pages to Wanklyn and Chapman's process for estimating ammonia and albumenoid nitrogen, but the

* "Quantitative Chemical Analysis," By T. E. THORPE, Ph. D., F.R.S.E. Longmans, Green and Co. (Text-books of Science, adapted for the use of Artizans and Students in Public and other Schools.)

value of this is impaired, as no statement is made as to the variations in quantity of albumenoid ammonia in waters of different qualities. One word in respect to the minute accuracy which we think should characterize any book on analytical chemistry, more particularly one offered to a student, and we have done with blame. The one word is a suggestion that, in a second edition, a correction might be made either on p. 158, where piano-wire is stated to contain 0.4 per cent. of impurity, or on p. 226, where it is stated to contain 0.3 per cent.

Taking the book as a preliminary guide, to one who means to become master of the art of analyzing, we must admit its excellences; it is indeed about the most practical book we have seen. The sections on gravimetric and volumetric analysis, and the subsequent section showing the application of these to general analysis, are well put together, while the examples chosen really do teach the principles of quantitative chemical analysis, and this in a practical as well as theoretical manner. We do not hesitate to say that the book will be found useful, even to analysts of some experience, more especially to men who have been so trained as to be simply "up" in one or two particular branches of analysis. There are hundreds of young men employed as "analysts" at chemical works who only deserve the name in so far as they are able to make certain analyses with some skill; they can make soda-ash estimations, determine chlorine in bleaching-powder, and make the several other special analyses required on the works, but they have little or no general knowledge of the art. It is to such men as these that we would cordially recommend this little work, as well as to real, practical, laboratory students. We speak of quantitative analysis as an art advisedly—the art lies in the happy combination of technical accuracy, simplicity and quickness of application in any given process; science affords the base of this art.

The author provides a very complete section, from a practical, educational point of view, on volumetric analysis, and the student will gain a very clear idea of the immense applicability of these quick methods after he has gone through the examples. The ingenious methods by which a given volumetric solution may be made to serve a variety of purposes, ought especially to attract his attention, and quicken his own inventive powers and resources. Matters which are apparently simple, such as the volumetric determination of lime by means of oxalic acid and permanganate of potassium, are in point of fact the best illustrations which can be afforded a student, and a careful study of such examples his best education.

In conclusion, when we say that the adaptation of this work for the use of artisans and schoolboys is not manifest to us, we trust we shall not be misunderstood—the intrinsic value of the book as a whole is considerable, but only a small part is suitable to such folks.

Literary Notes.

A NEW edition (the sixth) of Ganot and Atkinson's well-known work on "Physics" has just been published by Messrs. Longmans. It contains many additions, the most striking being three beautifully coloured lithographs.

Also has just appeared the third edition of Bentley's "Manual of Botany." (Churchill.) It has so often become our duty to recommend this work to students of botany that many comments here would be superfluous. We may notice, however, that in this new edition the author has taken considerable pains in touching up his comprehensive manual in order to retain the high position which ever since its first appearance it has taken as a work for study or reference.

We have also to acknowledge "An Easy Introduction to Chemistry," by the Rev. Arthur Rigg, M.A. (Rivingtons); "Waste Products and Undeveloped Substances," by P. L. Simmonds (Hardwicke); "How to Make Money by Patents," by Charles Barlow (Marlborough); "Short and Easy Book-keeping," by George Flint; "Beiträge zur Würdigung der heutigen Lebensverhältnisse der Pharmacie," von Ph. Phœbus, Giessen; and "Discussion sur les Rapports à Établir entre la Médecine et la Pharmacie dans l'Armée, Paris." Of some of these more anon.



REVISED TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the publisher of the CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of the CHEMIST AND DRUGGIST, Colonial Buildings, Cannon-street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser and with that his share in the transaction will cease.

FOR DISPOSAL.

Thirty lbs. Potassii Iodidum, at 18s. 6d. per lb.; in pottle, 17s. 6d., carriage paid. 30/217.

A new Set of Maw's Tooth Instruments, as Catalogue, Fig. 2. C. F. G. 200, High-street, Lincoln.

Shillecock's Leech Vase, 10s. 6d.; Cupri Sulph. Opt., 56 lb., 16s. 15/218.

"Pharmaceutical Journal." Posted Monday after publication. Offers wanted. Jenner, Bury St. Edmunds.

Bentley's "Botany," 2nd Edition; Attfield's "Chemistry," 1869, 6s. each, post free. 20/218.

Twenty-five oz. Tin Morphia Mur. (Macfarlane's), 14s. 6d per oz.. Nott cash. 1/219.

Day and Hewitt's Stock Breeder's Chest. List price six guineas; to be sold for 70s., perfect. Theophilus A. Wedge, 80, Victoria-street, Wolverhampton.

Cullon's "Practice of Physic," two vols., beautifully bound. Price 7s. 6d. Address. C. Fletcher, Allan-terrace, Sherwood-street, Nottingham.

Wanted to exchange, a Cigar Case, as Maw's Figure 53a, as good as new, for a Flat-counter Glass Case, with lift-up top. Woolstencroft, Chemist, Carnforth.

Lindloy's "Flora Medica," 18s.; Royle's "Materia Medica," 12s. 6d.; Thompson's "Medical Dictionary," 7s. 6d. Offers. Hill, 8, High-street, Horncastle.

Royle's "Materia Medica," 8s.; Bentley's "Botany," 8s Both nearly new. W. Read, West-street, Havant, Hants.

"Pharmaceutical Journal," from 1849 to 1870 inclusive. Cash or any useful article taken. F. Wellington, Messrs. Manning and Son, Yeovil.

Barth's Portable Oxygenator, equal to new. Offers wanted. Cost £4 4s. Rickerby, 211, Netherfield-road North, Liverpool.

A 20-gallon Copper Still, with head, neck, and worm complete, for immediate use. Cost over £13. Offers wanted. 30/217.

"Pharmaceutical Journal" from 1854 to 1872, unbound, in very good condition, mostly unent. To be sold to highest bidder. Thomas Loucitt, Coventry.

Cash offers wanted for 2½ lbs. Hyd. Ammon. Chlor. 2½ lbs. Gum Tragacanth Elect. 3 lbs. Acid Citric. 4 lbs. Rouge. 7 lbs. Cerugo Ceris Exot. 27/218.

Dispensing Screen, Counter Scales on Mahogany Stand, Quantity of Books, Squarries; a great bargain. Address, M. Field, Whitmore Reans, Wolverhampton.

Winslow's Syrup and Brow's Troches, 8s. 9d. per doz.; Neave's Food, 7s. 9d.; Turkey Sponge, 5s. 9d., trade value, 7s. 6d. 119/14.

Fifty-six lbs. Pulv. Amylum, 20s.; Set of Eight Forceps, with leather card, in good condition, 33s.; 1 cwt. Plumbi Aret., 43s. 6d. Diggle, Chemist, Ilkleywood.

Five Slate Cisterns, suitable for oils, &c., fitted with brass taps; dimensions and price on application. J. E. Griffith, Chemist, Bangor. v.

Three Five-grain Machines, 6s., 8s., 10s., all in condition. Scales, brass pillar mahogany stand, with drawer. List price 54s., will take 20s. Two Iron Mortars, 5s. and 15s. Mandley, Teignmouth.

Twenty-six doz. 6 oz. Round Pomade Bottles, 8d. per doz.; 18 doz. 3 oz. Octagon ditto, 6d. per doz. About 4 doz. 8 oz. and 10 oz. Stoppered Deeanter-shaped Bottles, at 2s. H. Bailey, Buckhurst-hill, Essex.

Two ounces Quina Sulph., Howard's; one ditto, unbleached, Hulie's; $\frac{3}{4}$ lb. Gum Opi Turc. Opt., and ounce Argent. Nit Crystals. 50s. the lot. Y. Z., The Chequers, Maldon.

"British Pharmacopœia," 1867; Squire's "Companion" to ditto; Royle's "Materia Medica;" "Selecta e Præscriptis;" "Latin Dictionary. Cash offers. "Alpha," 75, High-street, Burnstaple.

Four nests of excellent Chemists' Drawers, gilt labelled, solid mahogany fronts, containing 81, 58, 50, and 56 drawers; each nest has also a row of spaces. Apply, J. Edgar, 17, Dickinson-street, Manchester.

A Mahogany Desk and Show Case. Similar to Fig. 39 Maw's list, recently polished, and in perfect condition. Price £3 5s. Half dozen Taylor's Anti-Epileptic Medicine, cheap. Jenkinson, Chemist, Saffield.

14 lbs. Howard's Hydrag. Perchlorid, lump. 5s. per lb, or offer. Eau de Cologne, wickered, clean: Three pints No. 4; Four and a-half pints ditto; Two and a-half pints Gegenüberdem. Cost 24s. 19s., or offer. Ettles, Brighton.

Window Brasses (words "Chemist and Druggist"), Violet Ink, Silvering Solution, Jalapine, Sundries, Gold Lettered Show-frame, Perfume Recipe, Pipes, Gold Ring, etc Stamp for list. Carrington, Wincanton.

Very handsome Cut Glass Gas Chandelier, with six lights, price £10; or would exchange for pair of Specie Jars and Counter Writing Desk, with Glass Case in front. J. Onion, Lodge-road, Hockley, Birmingham.

The largest size Bust of Hahnemann; cost a guinea, take 10s. 6d.; $\frac{1}{4}$ -Plate Lens, Camera, and Stand, 25s.; 5-grain Pill Machine, cuts twenty-four, 10s. Robert Lyon and Co., Chemists, Ipswich.

Binoocular Microscope, first-class, quite new, with Polariscopes and other apparatus, in handsome polished mahogany cabinet. Only £10 10s. Apply, "B.," 151, Hoxton-street, London, N. x.

One lb. Sodium; pair of Ornamental Iron Carboy Stands, with six Circular Trays attached, very showy, 60s.; Turner's Guinea Homœopathic Show Case, 15s.; Water Bed, nearly new, 72 by 30. Offers. Thompson Bros., Lymm, Cheshire.

Four cwt. Parr's Cattle Food, penny packets; 1 cwt. Hope's ditto; 2 cwt. the Cocoa Cattle Food Company, 10l. packets and 28 bags. All clean and in good condition. 15 per cent. discount, or offers wanted or exchange. Charlwood, Dale End, Birmingham.

Furnace, Boiler, two Pans, two Condensers, Drying-closet, Steam Funnel and Head, 4 gallon Still, all copper, $1\frac{1}{2}$ gallon tin Still, etc.; suitable for small laboratory. Cost over £65. The lot for £22, or exchange for drugs, chemicals, etc. Tanner, Fairfield, Liverpool.

Hooper's "Medical" and Cooper's "Surgical Dictionaries;" Jones (Wharton) "Ophthalmic Medicine;" Lane on "Syphilis;" Underwood "Diseases of Children;" all in good condition. Offers wanted. Walby, Great Howard-street, Liverpool.

Nests, Small Drawers; Bals. Canada (3 lbs.); 64 lbs. Cart Grease, 6s. 6d.; Four Cosmetique Moulds, each make thirty, 6s.; Skull of Grampus; Skull of Horse, Foreteeth, Hoofs are loose; 106 lbs. Gillard's Spice; old Medical Books. Cash or exchange. R. C. Mason, Bromsgrove.

Two Handsome Specie Jars, with glass covers, gilt inside, 31 inches high, 13 inches diameter, with ornamental scroll labels (lettered "Magnesia" and "Arrowroot"), surmounted with Prince of Wales's feathers, mahogany stands, 19 inches square, 8 inches high. Cost £10 10s. Price £5. B. M. Tippet, Sloane-street.

A strong Mahogany Counter Case, bent, plate glass, 34 in. long, 18 in. wide; nearly new. Price £1. A good strong Mahogany Desk, with pigeon holes, nearly new; suitable for a post-office; with mahogany and ornamental glass sides. Price 25s. Baily, Chemist, Regent's Park-road.

Offers for Six Gross Transparent Cement (quality guaranteed) were put up for export in one-drachm bottles, retail 6l. each bottle in card box, packed in binged boxes containing one dozen. Sample dozen free for twenty-four stamps. Address, Goosey and Rogers, Chemists, Stepney, London.

A Grinding Mill, made of the best French Stones, on latest improvement, adapted for steam power, suitable for confectionery, will grind 5 cwt. sugar per day, or grind sal ammoniac, antimony, etc., to an impalpable powder. For price and sketch, address, J. G., 14, Netherthorpe-street, Saffield.

Two lbs. Pulv. Rhei E. I., at 3s. 2d. per lb; 2 lbs. Pulv. Jalap, Vera Cruz, 3s. per lb.; 4 lbs. Rad. Sa. zæ Jan Iocis, 2s. 10 $\frac{1}{2}$ d. per lb. The Powders, my own grinding, warranted pure. The Adulteration Act being now in force, the above will be found great boons. F. Baldwin, 35, Queen's road, Peckham, S. E.

100-gallon Turpentine Cistern, with Screw Bung and Tap, complete, by Noakes & Co.; 1-gallon Forrest's Measuring Apparatus, with about 30 feet Leaden Piping; a Cranstone's Paint Mill, one 3 ft. by 4 $\frac{1}{2}$ in., two 12 ft. by 5 in., Polished Glass Scales, three 27 in. by 5 in. Cash offers wanted for the above. Z. Z., Post Office, Brentwood.

Two 5 Grain Pill Machines to cut 12 and 24, good as new, 8s. 6d. and 15s., or offers; 2 or 3 lbs. Ext. Papav. Albæ, 2s. per lb.; Case containing 4 Forceps, lower molar, new; Upper Incisors, equal to new; one lower molar and one lower wisdom (small for children), old—the lot, 7s. 6d. E. A. E., Post Office, Preston-street, Hulme, Manchester.

Counter, with mahogany top, well fitted with drawers, partitioned for labels and retail purposes. Nest of Drawers, in polished birch, and labelled, with cupboards for bottles; shelving to match. Pear-shaped Show Globes; Spiral ditto, with cut stoppers; Stoppered Bottles, Ointment Jars, quantity of Drugs, Tinctures, &c. A. Learoyd, Chemists' Valuer, Bond-street, Leeds.

Two Iron Quicksilver Bottles, 4s. Tin Still, one gallon, as (Maw's, 15s.), 7s. 6d. $1\frac{1}{2}$ Pint Glass Mortar, 3s. Ointment Machine, makes 10 lb. quicksilver; could be fixed for steam, price 50s. Vols. I. to III. "Pharmaceutical Journal," edited by Jacob Bell, 1841 to 1844, 10s. "Library of Medicine," two vols., Alexander Tweedie, 1840, well bound, 3s. Stevens "On the Blood," published at 15s., 3s. S. J. Potts, Chemist, Mansfield.

Two Show Jars, 19-in. high, weight 11 lbs. each, ornamental gold labels, 15s. 6d. each. Nest 15 oak Drawers, mahogany fronts, glass labels and knobs, 30-in. by 32-in., nearly new, 21s. Case for Counter edge, 8 ft. long, 1 foot wide, 4-in. deep, four heavy plate glass, mahogany frame, 35s. Case for Counter front, 6 feet long, 2 $\frac{1}{2}$ feet high, handsome carved trusses to support counter, mahogany front, three sheet glass doors, £2. J. Floyd, Bury St. Edmunds.

Quin and Wilson's "Anatomical Plates" (200), many coloured, 5 vols., 6 guineas (published at £14); "Pharmaceutical Journal," Vols. I. to V., 12s. 6d.; Smith's "Analysis of Medical Evidence," 2s. 6d.; "Popular Science Review," complete, £3 3s. (published at £6 18s.); Bentham's "British Flora" (new), 31s. 6d. (published at £3 10s.); Quirkett's "Lectures on Histology," 14s.; Paxton's "Anatomy," 2 vols., 5s.; Sampson's "Homœopathy," 2s.; Prichard's "Physical History of Man-kind," 37s. 6d. A. Davis, 761, Seven Sisters-road London, N.

Three 3 and two 8-gallon Carboys, cut-glass stoppers. Several handsome Specie Jars. Shop Bottles, gold labelled, 20, 30, 40 oz., 9s., 11s., 14s. per dozen. Two 24 and one 12 five grain Pill Machines. Tincture Pross. Fine Fol. Sennæ Tin, 6lb. Large stock of Drugs, Chemicals, and Sundries. Cockle's, Norton's, Powell's, Steedman's, Whelpton's, Winslow's, Allecock's, Browne's Troches, Browne's Chlorodyne, 9s. a dozen; Stedman's, 7s. 3d.; Allen's Restorer, 42s.; Mexican, 24s.; Zylbalsamum, 22s.; Floriline, 20s.; Ext. Carnis, Liebig's Company, 14s. 9d.; Tooth's, 14s. 3d.; Ramornie's, 12s. 10d. Stamp for list. Lloyd Rayner, 309, New North-road, Islington, London.

WANTED.

Dr. Hilario Barlow's "Practice of Medicine." 6/218.

A Bell-metal Mortar. 9/214.

Gaselier, 3 lights. Satchel and strap. R. C. Mason, Bromsgrove.

"British Pharmacopœia." Must be cheap and clean. 29/217.

Dentists' Lathe and Tools. State price. Mr. Brownridge, Medical Hall, Openshaw.

Five-grain Pill Machine; new books on Agricultural Chemistry. 19/218.

"British Pharmacopœia," 1867. J. M. Shipham, Dresden, Staffordshire.

Selecta e Præscriptis, B.P., 1867. Works on Materia Medica. Cheap. Post-paid. Judd, Wandsworth, S.W.

A Cabinet Materia Medica, and 2 three-gallon Carboys, Stoppered. W. H. Reedman, Bletchingley.

A 3-grain Pill Machine. George Owen, Chemist, Soho-street, Handsworth, Birmingham.

Selecta Prescriptæ. John T. Newbon, 250, Langsett-road, Sheffield.

Twenty-ounce and 8 oz. W. and N. M. shop rounds; gum laneet; 4 lb. ointment jars, lilac; 1 doz. syrup bottles; 2 by 6 mortars and pestles; Tanner's "Index of Diseases," Barber's "Pharmacopœia," Redwood's "Supplement to Pharmacopœia." State price and condition. 40/219.

Pharmacy.

MR. J. B. BARNES made several useful pharmaceutical notes at the last evening meeting of the Pharmaceutical Society.

GUAIACUM RESIN,

as imported, he finds is always impure. In one sample he found 14.4 per cent., and in another 11.7 per cent. of impurity. He recommends the invariable employment of purified guaiacum resin.

SIMPLE EXTRACT OF COLOCYNTH,

prepared by two macerations of the pulp in cold distilled water, pressing, boiling the liquor, separating the coagulated matter, evaporating to dryness, and exhausting with rectified spirit, yielded the same amount of extract as was obtained from the same quantity and sample of colocynth pulp which had been exhausted with proof spirit and evaporated to dryness until the weight was constant. By this means the use of a large quantity of spirit and subsequent distillation was avoided.

INFUSION OF ROSES.

Mr. Barnes finds that one part of glycerine added to eight or nine parts of infusion keeps it bright and clear. Also that when three fluid drachms of glycerine are added to a mixture composed of one grain sulphate of quinia, one minim of dilute sulphuric acid, and nine fluid drachms of infusion of roses, the precipitate of tannate of quinia

which forms is dissolved, and the result is a beautifully bright solution. The precipitate which occurs in gargles containing tannic acid and infusion of roses can also be dissolved by the addition of two fluid ounces of glycerine to the pint.

QUININE PILL MASS.

M. Berquier, of Provins, in the *Repertoire de Pharmacie* suggests the following formula for a quinine pill mass:—

Sulphate of quinine	30 grains.
Powdered gum	5 "
Glycerine	10 "

Mix the gum with the glycerine and then incorporate the quinine, beating it well in a mortar.

This is said to give a mass of good pilular consistence, which retains its softness, and can be easily rolled into pills. It can readily be worked up with other ingredients, and is not bulky. Three grains of this mass are equal to two grains of sulphate of quinine.

TEST FOR CARBOLIC ACID IN DISINFECTING POWDERS.

Messrs. Calvert and Co., have sent us the following which is worth making a note of. It is a method for determining, roughly, the amount of free carbolic acid contained in carbolic acid disinfecting powder, and consequently its real value as a disinfectant:—

"Weigh 1,000 grains of the powder, and place it in a small tubulated retort.

"Heat the retort gradually, until the liquid distillate ceases to drop (a brisk heat is required towards the end of the operation).

"Collect the distillate, which will condense in the tube of the retort, in a graduated cylinder grain measure, and allow it to settle for one hour, when the amount of oily liquid and water may be read off.

"The oily liquid should represent the amount of carbolic acid; and, to determine if it consists of carbolic acid, to one volume of it add two volumes of a solution of pure caustic soda, 14° Twaddle's hydrometer, temp. 80° Fahrenheit, which will entirely dissolve the carbolic acid.

"If any remain undissolved, it will probably consist of either heavy or light oil of tar, the most frequent adulterants of carbolic acid; and, in some cases, entirely substituting it."

The above process will, if carefully worked, give within half per cent. of the amount of carbolic acid really contained by the powder.



[The following list has been compiled expressly for the CHEMIST AND DRUGGIST by L. de Fontainemoreau & Co., Patent Agents, 4, South-st., Finsbury, London; 10, Rue de la Fidélité, Paris; and 83, Rue des Minimes, Brussels.]

Provisional protection for six months has been granted for the following:—

2484. A. Do. Penamacor and A. Castro, both of Lisbon, Portugal, and T. S. Hopcraft, of Mining-lane. Improvements in the production of citric acid, tartaric acid, and alcohol. Dated 19th July, 1873.
2602. C. Rawson, of St. Swithun's-lane, and W. C. Sillar, of Blackheath, Kent, and J. W. Slater, of Tunworth-terrace, analytical chemist, and T. S. Wilson, of Cambridge-terrace, engineer. Improvements in treating putrescent or putrescible matters, such as sewage, night soil, fish offal, blood, and other animal matters and vegetable matters, for the manufacture of manures therefrom. Dated 8th August, 1873.
2691. E. G. Banner, of Billiter-square. Improvements in disinfecting apparatus. Dated 13th August, 1873.
2720. J. W. Freestone, of Dalston, and J. Humphries, of Little Ilford, Essex. An improved process and apparatus for treating spent oxide of iron, to extract sulphur and ammoniacal salts therefrom, and purifying these products, which invention is also applicable for the extraction of grease and oil from seeds and other materials. Dated 18th August, 1873.
2739. H. Kenyon, manufacturing chemist, and J. Tivendells, analytical chemist, of Warrington, Lancaster. Improvements in apparatus for the manufacture of sulphate of soda, chlorine, hydrochloric acid, and cements. Dated 19th August, 1873.

2751. P. Villiers, M.D., of Collegio-street, Fulham-road, and J. Mayer, of Great Portland-street. Improvements in means and apparatus for the impregnation of air for supplying the lungs or other parts of the body. Dated 20th August, 1873.
2760. W. H. Hughan, of Morningside, Eccles, Lancaster. Improvements in the treatment of night soil, sewage, and other like refuse matters, and in the production of materials capable of being employed for the purpose of doolozation. Dated 20th Aug., 1873.
2761. G. Haseltine, of London. An improved solvent, obtained by the distillation of crude turpentine. Dated 20th August, 1873.
2769. S. R. Rowe, of Redruth, Cornwall, analytical chemist, and J. C. Johnson, of London, cement manufacturer. Improved means of, and apparatus for condensing and rendering harmless arsenious, chlorous, sulphurous, and other unpleasant and deleterious gases or vapours that are given off in the manufacture of Portland and other cements and limes, as well as in the treatment of mineral and metallic ores. Dated 21st August, 1873.
2825. J. Durant, of Bristol, dealer in druggists' sundries. Improved means of administering medicines to horses, dogs, and other animals. Dated 27th August, 1873.
2838. C. D. Abel, of London. A new process for the production of soda and potash, from their respective haloid salts by the direct wet method. Dated 28th August, 1873.
2840. J. H. Johnson, of London. Improvements in apparatus for generating hydrogen or carburcted hydrogen gas, and in the means for evaporating the dilute acid employed in generating the gas. Dated 28th August, 1873.
2894. S. H. Johnson, of Lea Bank Works, Warton-road, Stratford, Essex, manufacturing chemist. Improvements in the method of and apparatus for separating free sulphur from substances containing it. Dated 2nd September, 1873.

Letters Patent have been issued for the following :—

764. J. Hargreaves, chemist, and T. Robinson, ironfounder, of Widnes, Lancaster. Improvements in the manufacture of soda and potassa. Dated 3rd March, 1873.
828. J. Hargreaves, chemist, and T. Robinson, ironfounder, of Widnes, Lancaster. Improvements in the manufacture of sulphates of soda and of potass, and in the products of chlorine. Dated 7th March, 1873.
843. C. W. Harrison, of High Holborn. Improvements in apparatus for charging or impregnating atmospheric air with the vapour of hydrocarbon liquids. Dated 8th March, 1873.
844. J. Builey, of Birmingham, manufacturer. Improvements in or additions to infants' feeding bottles. Dated 8th March, 1873.
854. E. Galeer, of Bienne, Berne, Switzerland. An improved hair wash. Dated 10th March, 1873.
894. R. J. Jones, of Ellerslie House, Walton, near Liverpool. Improvements in operations and apparatus for drying down waste alkaline solutions, of extractive matter obtained in preparing vegetable fibrous material for use in the manufacture of paper, and in recovering therefrom the alkali for reuse, also for utilizing the vapours given off during the boiling of the vegetable material, or the drying down of the said solutions. Dated 12th March, 1873.
959. W. A. Gilbee, of Finsbury, London. An improved stopper for bottles and other vessels. Dated 15th March, 1873.
974. W. H. Watson, engineer, and R. A. Robertson, manager, of Glasgow. Improvements in filtering liquids and in the machinery or apparatus employed therefor, being more especially adapted for filtering saccharine solutions. Dated 17th March, 1873.
1055. P. Jensen, of London. Improvements in manures. Dated 21st March, 1873.
1354. T. P. Hawksley, of Blenheim-street, New Bond-street, surgical instrument maker. An improved construction of stethoscope. Dated 15th April, 1873.
1741. R. T. Newall, of Washington Chemical Works, Newcastle-on-Tyne. Improvements in the manufacture of magnesia. Dated 13th May, 1873.
2458. T. F. Lynch, of Aldersgate-street. Improvements in infants' feeding bottles and in caps or covers for the same. Dated 16th July, 1873.
2567. W. Leech, of Moorgate-street. An improved method of preserving wood from the ravages of white ants and other insects, by the application of certain chemical solutions. Dated 29th July, 1873.

Specifications published during the month :—

Postage, 1d. each extra.

1872.

3809. S. W. Konn. Electric light. 8d.
3882. W. W. Fereday. Treating oxalic for conversion into manure. 1s.

1873.

42. W. G. Thomson. Extracting fatty matters. 6d.
75. H. Codd. Glass bottles. 10d.
84. A. T. C. Schoovers. Trusses. 8d.
87. J. R. Chislett. Applying electricity for curative and other purposes. 10d.
97. R. Thwaites and another. Corks and bottles. 1s.
108. J. L. F. Target. Treating excreta and sewage. 1s.
212. T. F. Henley. Meat extract. 4d.
218. C. Farrow. Stoppers for bottles. 4d.
258. A. Gutensohn. Obtaining salt of tin, &c. 4d.
268. H. Williams. Utilizing waste heat for the manufacture of soda ash, &c. 6d.
302. J. Coxeter. Apparatus for administering nitrous oxides, &c. 4d.
324. H. Smith. Feeding bottles. 4d.
328. T. J. Smith. Manufacture of baryta. 4d.
405. J. H. Johnson. Solidifying essential oils. 4d.
505. H. Deacon. Manufacture of chlorino. 4d.
515. J. Broad. Case or bag for applying poultices. 4d.
1270. L. Weber. Galvanic batteries. 6d.
1641. G. Haseltine. Galvanic batteries. 8d.

WEST COAST OF AFRICA.—THE ASHANTEE EXPEDITION.

THE first needs of an expedition to the West Coast are a good food and water supply. That the expedition will be properly equipped in all other respects we take for granted, and that the authorities who have the conduct of it will do the best they can to secure the health and comfort of the men engaged is evident by the care they are taking to secure an ample supply of medical comforts, pure water, and just that kind of food which is suited to the climate. We believe that at the outset considerable supplies of salt pork and beef were despatched, but, as it is a question whether this kind of food will prove sufficiently sustaining, the Control Department are now about to forward large supplies of preserved soups and tinned meats—such as are preserved in this country for ships' use, and imported from Australia. Indeed, the suitability of the latter food cannot be questioned, as it can be taken either hot or cold, and has sustaining qualities almost if not quite equal to fresh butchers' meat. The food supply then being assured, there remains only the question of water to be disposed of. Much of the water to be found upon the coast is stagnant, and some of it is rendered undrinkable by the presence of bush plants both dead and alive. To secure, then, the expedition against the evils of impure water is one of the first elements of success, and that the authorities are fully alive to this fact is evident from the trouble they have taken to secure the best filters that can be obtained. Indeed, we have it upon very good authority that the Supply Department at Woolwich have thoroughly tested the filters of all the leading manufacturers, in order to be sure that they are sending out the best and most suitable that can be secured. The first order consisted of a number of Messrs. Lipscombe's make, then a supply was taken from Messrs. Atkins, and finally the Silicated Carbon Filter Company received the last order that has yet been sent out—the inference being that the filters of this company meet all the requirements of the case. The Supply Department are borne out in the action they have taken in this important point by the remarks of the Analytical Sanitary Commission of the *Lancet*, who, after the last outbreak of cholera in this country, made a series of experiments in regard to the best means of filtering water, and awarded the palm to the Silicated Carbon Filter. The filters to be sent out by this company will supply many hundreds of men. With pure water, then, suitable food, and other conditions well and ably considered, our troops will maintain the prestige of England even among the miasma-engendering swamps of the West Coast.—*The European Mail*.

MARRIAGES.

LESEHER—GREHAN.—October 16, at St. Mary's Catholic Chapel, Hampstead, F. H. Lescher, Esq., to Mary O'Conor Grehan.

DEATHS.

On October 1, Mr. John Dickinson, chemist and druggist, 118, of Great College-street, Camden-town.

On October 4, 1873, Mr. James Brocklehurst, pharmaceutical chemist, of Hyde, Cheshire.

On October 6, 1873, Mr. Benjamin Jones, chemist and druggist, London-road, Twickenham. Mr. Jones was a member of the Pharmaceutical Society.

On October 23, 1873, Mr. William Horsley, chemist and druggist, of Malton, Yorkshire.

On October 24, Dr. Frederick Crace-Calvert, F.R.S., at his residence, Clayton Vale, Newton Heath.

On November 3, 1873, Mr. Joseph Bateman Dodd, chemist and druggist, of Manning-street, Bermondsey.

On November 4, 1873, Mr. George Dymond, of the firm of Southall, Son, and Dymond, Birmingham, aged 44.

A FIRE occurred on Sunday, the 2nd inst., at Mr. Morson's, 124, Southampton-row. It was confined to the house, but unfortunately destroyed a number of valuable paintings and articles of vertu.



COLONIAL BUILDINGS, CANNON-ST., LONDON, E.C.

Advertisements, Remittances, Subscriptions, Orders for Copies, and all communications must be addressed to "THE PUBLISHER" of THE CHEMIST AND DRUGGIST.

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No one is authorised to collect money without production of the Proprietors' lithographed form of receipt.

Receipts not forwarded for sums under 10s., unless the remittance be accompanied by a stamped envelope.

SCALE OF CHARGES FOR ADVERTISEMENTS.

One Page £5; Half Page £2 14s.; Quarter Page £1 12s. Special Rates for Wrapper, and the pages preceding and following literary matter. The above Scale of Charges will be subject to a discount of 10 per cent. upon Six, and 20 per cent. upon thirteen insertions. Seven Lines and under, 4s. 6d.; every additional Line, 6d.

Advertisements of Assistants Wanting Situations (not exceeding 12 words) inserted at a nominal charge of 1s. each.

All Advertisements intended for insertion in the current Month must be sent to THE PUBLISHER of THE CHEMIST AND DRUGGIST on or before the 12th, except Employers and Assistants' Advertisements, which can be received up to 10 a.m. on the morning previous to publication.

Subscribers are requested to observe that the receipt of THE CHEMIST AND DRUGGIST in a Green Wrapper indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

FOREIGN AGENTS.

ADELAIDE.....	Messrs. Foulding and Co.
AUCKLAND	" Kempthorne, Prosser, and Co.
BOSTON, U.S.	" Office of "Boston Journal of Chemistry."
CALCUTTA.....	" Bathgated and Co.
CHICAGO	" W. A. Weed and Co.
CUNEDIN	" Kempthorne, Prosser, and Co.
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We beg to inform our foreign subscribers that the partially unstitched condition in which they receive this journal is in accordance with a regulation of the English Post-office. In common with our contemporaries, to all of whom the same law applies, we are totally ignorant of the purpose of this vexatious rule. We have in vain protested privately against a regulation which compels us to appear before our readers somewhat untidily; and now we feel it due to ourselves to make this public explanation.

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"WITH regard to the Silicated Carbon Filters, I have made many experiments upon them, and have been astonished at the energy and rapidity of their action. I passed through a small Filter of this make some of the worst description of water supplied by the London Water Companies, and found it, after filtration, to have become as pure as the very best London water. My experiments show that the Filter exercises a decomposing action—a chemical action—on the Organic impurities in Drinking Water. I have no doubt that Water, which is dangerous from the Organic Matter contained in it, becomes safe on passing through the Silicated Carbon Filter. A point of some importance, shown by my experiments, is that a Second Filtration still further improves the quality of Drinking Water. After being in use for a considerable period, Filters lose their power and require renovation. I have found that the passage of a little Hot Water through the Silicated Carbon Filter, and afterwards blowing a little air through it, restores its power."

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Formerly Professor of Chemistry in the London Institution;
Joint Author of a Book on Water Analysis, and of the
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CITRATE OF MAGNESIA.

THE prosecution of a druggist under the Adulteration Act for selling citrate of magnesia has not unnaturally startled the whole trade. It is very much to be regretted that a case so important to every chemist should have been decided without a single word of reasonable defence being offered. That the magistrate convicted the defendant under a misapprehension is evident on the face of the report. The dispensing of a prescription was mixed up with the purchase of the citrate of magnesia—for what purpose is not very clear—and Mr. Partridge seems not to have understood that the transactions were separate. We can hardly believe that had it been explained that the substance universally sold as citrate of magnesia is exactly that which the public want when they ask for that article, the same result would have occurred. If the law is really as it has been interpreted in this instance we can see no reason why the sale of seidlitz powders, essence of new-mown hay, Turkey carpets, and a hundred other well recognised misnomers is not equally liable to a fine under the same Act. We are informed that the inspector who laid the trap for Mr. McDermott brought a paper on which was written *Magnes. Cit. Effervesces 3iv.; a tablespoonful to be taken every four hours.* It is almost to be regretted that he did not get the genuine chemical, and had been compelled to take it according to the prescription.

It is probable that all chemists throughout Great Britain deal in citrate of magnesia. By the recent decision they are placed in a very awkward position. No individual pharmacist is eager to bear the expense and

annoyance of a police prosecution in order to settle the question for the trade generally. It can hardly happen that he, as a retail dealer, is sufficiently interested in its sale to make such a game worth the candle, even though he were certain of success. Such being the case we feel bound to unite in the severe criticism of the Pharmaceutical Council, expressed in many quarters, for their indecision and want of action in this matter. In a contribution from Mr. Huskisson Adrian, F.C.S., in these pages, and in one from "A Pharmaceutical Chemist," will be found some very pertinent remarks on this point, and also in a letter from Mr. Catford, which we transfer from the columns of the *Pharmaceutical Journal* to our own. It may easily be granted that it does not come strictly within the line of the duty of the Council to take proceedings to settle a point of law, and we readily admit that the Pharmaceutical Society might soon do mischief and weaken its power for good if it drifted into a mere Trade Protection Society. But this fear need not always deter the Council from usefulness, and in this instance it was officially abandoned; for though the deliberations of the Council on the subject were secret, we were clearly informed at the evening meeting last week that the difficulty of taking any step in the matter was occasioned by the fact that Mr. McDermott was neither a member of the Pharmaceutical Society, nor a registered chemist and druggist. Why this should prevent the Council from doing something to aid the twelve or thirteen thousand others whose names are on the register, we entirely fail to see. We are sorry for Mr. McDermott certainly, but this is not a personal question. It affects the whole trade.

In the absence of aid from that quarter we are glad to be able to report that Mr. Bishop, the inventor of the preparation which has since become so popular, has been taking very active steps to get the most authoritative legal advice as to the best course to pursue. That gentleman has promised to give us the earliest possible information as to the opinions which will be given, and if received in time we shall print it as a postscript in this number. If not, chemists will soon be advised by circular as to the result. Other firms announce somewhat newly worded labels; and chemists will do well to read the discussion which took place at Bloomsbury Square on November 5. All who can, too, should attend the meeting called by the National Chamber of Trade, for Wednesday evening next, and announced in our advertising pages. For our own part we cannot think that anyone need be under the slightest apprehension in continuing the sale of the article, as even in the event of another prosecution, which is unlikely after the attention which has been attracted to this one, it is almost certain that the defence would be taken up either by a public body or a manufacturer.

THE ADULTERATION ACT.

WE cannot say whether the clause in Mr. Disraeli's celebrated Bath letter, in which he accuses the Government of having "harassed every trade," may be taken as an indication that tradesmen generally may look for his alliance next session. But without counting too much on that versatile gentleman's assistance, it will be well themselves to get ready for the campaign. We can hardly anticipate that, if properly worked, there need be much difficulty in obtaining at least some corrections of the present Adulteration Act. He would be a bold partisan who would maintain its perfection against all comers. The utmost that can be fairly said for the Act is that it has

worked a small amount of good by the exercise of an enormous amount of injustice. And the worst feature of it is that this injustice is not inflicted accidentally, but with malice aforethought. It has been distinctly decided in the Court of Queen's Bench (in the case of *Fitzpatrick v. Kelly*) that the sale of an adulterated article is to be regarded as an offence, whether the seller is aware of the adulteration or not, and that there need be no express representation or statement that the article is unadulterated. Mr. Justice Blackburn, in that case, said:—"The sale of an adulterated article as unadulterated may well be punishable without knowledge on the part of the seller, for a very little trouble would enable a tradesman to ascertain."

More than this, the definition of adulteration is so vague that neither analysts nor magistrates nor manufacturers nor retailers can get any clear notion of what may and what may not be sold.

As an instance of the working of the Act, take the case of Mr. Kelly, of Liverpool. That gentleman was prosecuted for selling adulterated butter. Undeniably the main support of the prosecution was that he sold butter cheap. Several trials occurred, many counsel had to be engaged, analytical chemists were busily employed; and ultimately the last, who had been chosen as referee, gave a long and laboured opinion, which was simply to the effect that a sample of butter, which had been kept for nearly a year, was stale! Mr. Kelly won the verdict, which virtually acknowledged that he had been prosecuted without any just cause; but though he had doubtless spent over a hundred pounds to maintain his business reputation, not a sixpence of that expense was returned to him. What tradesman is free from a similar prosecution?

The grocers are stirring vigorously in the matter. Of course the Adulteration Act is aimed chiefly at them. But the fact that inspectors and analysts have had to get up vexatious cases about soluble cocoa and mustard is a proof of the paucity of really serious adulterations, and shows how enormously sensational writers had exaggerated the dangers of our breakfast table. Just so does the recent citrate of magnesia case indicate how small is the percentage of adulteration practised in drugs. We know, for a fact, that more than one of the metropolitan analysts have been surprised at the almost universally genuine character of the medicines supplied, even in poor districts. One result of the Act has been the rise in the price of milk—a tolerably cool admission on the part of the dairymen that some legislation was needed in respect to them; or, if not, that this extra charge is an attempt on their part to take an unfair advantage of the opportunity offered. As to the bakers, we really cannot pretend to know what the Act has proved as regards bread, after the exposure of analysts recorded in the Shoreditch Vestry last week, from which it appeared that samples of bread, purposely grossly adulterated with alum, had been certified by two publicly-appointed chemists to be perfectly pure. The grocers regard it as an unjust anomaly that in the matter of tea the Government should first of all charge the duty on everything which imaginative Chinese choose to send to us under that attractive name, and should immediately afterwards fine a retailer for selling it. It has recently been asserted that out of 183 millions of pounds of tea imported into this country in 1872, no less than 40 millions of pounds were so grossly adulterated as to be unfit for food. It is maintained that the simplest, surest, and fairest means of preventing the sale of this rubbish would be to stop it at the Custom House, where an analyst might be employed for the purpose. In reply to a resolution to that

effect, Mr. Gladstone's secretary informs the secretary of the Chamber of Trade that "Her Majesty's advisors see much difficulty" in any such measure. The possible loss of forty million sixpences may enter into the composition of that difficulty.

Both grocers and druggists have borne the injustices of this Adulteration Act with remarkable patience. As a body they have been as anxious as the Privy Council itself to see a stop put to adulteration. But the absurdly literal manner in which it is now being interpreted is likely to excite their energetic opposition. In drugs and chemicals this literal rendering of the clauses is simply impossible. Even best qualities vary, and a magistrate it seems may be readily frightened into the idea that chemists and druggists are mere conspirators against the life and health of Her Majesty's subjects.

When Mr. Muntz, M.P., introduced his Adulteration Bill into Parliament in 1871, we pointed out that, as we read its clauses, it would render those who were perfectly innocent of any fraudulent intention liable to penal consequences. In reference to this, Mr. Muntz wrote us a letter (published in our issue for May, 1871), in which occurs the following sentence:—"The object is merely to enable the magistrates to inflict a higher penalty than £5 on those who wilfully mix injurious or even poisonous ingredients in food or drugs." Mr. Muntz himself emphasized the word "wilfully." This bill was not passed, but a new one, promoted by Government, was substituted for it the next year, and is the one now under discussion. Respecting this one, the testimony of Mr. Haselden and Mr. Sandford, as to their interviews with Lord Salisbury and Earl Granville, is very important. Mr. Sandford positively asserts that the decision of the Court of Queen's Bench is in direct opposition to the clearly expressed intention of both those noble lords.

These are a few points for the reflection of chemists and druggists, who we hope will muster in good force at the meeting on Wednesday night next, and agree on some method of action.

THE PHARMACEUTICAL COUNCIL.

THE business of the Pharmaceutical Council at their last meeting, as far as reported, was not of much public importance. The discussion on the action which the Council should take in reference to the "citrate of magnesia" case is kept secret, while we are favoured with the report of a sub-committee appointed to purchase a new gaselier, and with several speeches as to the furnishing of the Council room. Some serious discussion as to the benevolent fund occurred, from which it appeared that subscriptions did not come in so abundantly as might have been hoped. The secretary stated that a general appeal by circular a short time ago brought in not money but many applications for relief. The subscriptions received did not cover the cost. Mr. Robbins urged the policy of scattering in the hope of increasing. He thought they were hoarding money for future generations, instead of doing what their means would allow. Mr. Williams seemed to have less faith. Ultimately a committee was proposed to consider the matter.

The report of the library, museum, and laboratory committee brought out the alarming fact that the new scheme of education was not so prosperous as had been hoped. The pharmacy class showed 33 students as against 60 last year; botany, etc., 21 *vice* 59; laboratory, 30 *vice* 40. Mr. Sutton thought this was a sign that education was improving in the provinces; Mr. Williams looked for better things next half year; Mr. Schaecht, not without some grim sort of satisfaction, remarked that this was the most natural result possible, seeing that under the new arrangements there was a diminished quantity of instruction given for double the price.

Next, a long discussion took place on a proposal of the board of examiners to substitute thirty or forty centres for the Preliminary Examination, instead of holding it in every town where there is a local secretary: to pay the gentlemen appointed to superintend such examinations; and to provide that the examinations for the Bell Scholarships, Pereira Medal, and Prize of Books be held in London and Edinburgh only. Mr. Schaecht and Mr. Stoddart warmly opposed this project, maintaining that such irregularities as might have occurred under the present system could be avoided by a little attention. Mr. Sandford ably defended the proposal, which was ultimately referred to the inevitable committee.

Sheffield asked for £15. The application was referred to a committee.

The following report of the board of examiners is interesting. Particularly noticeable is the fact pointed out by Mr. Williams of the much larger proportion of successful candidates in Edinburgh than London.

REPORTS OF EXAMINATIONS.

October, 1872.

ENGLAND AND WALES.

Examinations.	Candidates.		
	Examined.	Passed.	Failed.
Major	6	2	4
Minor	99	43	56
Modified	23	7	16
Preliminary	286	129	157
	414	181	233

Certificates received in lieu of the Preliminary Examination:—

University of London	1
University of Cambridge	2
University of Oxford	1
University of Edinburgh	1
College of Preceptors	3
Royal College of Surgeons	2
Faculty of Physicians and Surgeons in Glasgow	1

SCOTLAND.

Examinations.	Candidates.		
	Examined.	Passed.	Failed.
Major	2	1	1
Minor	31	21	10
Modified	6	4	2
Preliminary	25	18	7
	64	44	20

Certificates received in lieu of the Preliminary Examination:—

Royal College of Physicians and Surgeons in Edinburgh	1
University of Edinburgh	1
	2

THE RECENT "CITRATE OF MAGNESIA" PROSECUTION.

By HUSKISSON ADRIAN, F.C.S.

ON the 31st of October a chemist named McDermott was prosecuted by the sanitary authorities of Bermondsey for selling as "citrate of magnesia" a compound which the local analyst certified to be a mixture of citric and tartaric acids with sugar and bicarbonate of soda. This prosecution suggests several points of public importance.

In the first place, the granular effervescent salt so popular in England under the name of "citrate of magnesia," consists essentially of exactly those substances which the analyst mentioned, with, in some cases, a small proportion of dried sulphate of magnesia, so that the thousands of chemists and grocers engaged in its sale are each and all liable to a prosecution similar to that which has so seriously affected Mr. McDermott in pocket and reputation.

Some particulars respecting this salt are given in the CHEMIST AND DRUGGIST for 1869. About the year 1857,

Mr. Alfred Bishop commenced manufacturing the "citrate of magnesia," and, very naturally, kept its real constitution to himself as long as possible; for though imitation is the sincerest flattery, yet it is the one species of flattery to which the owner of an article in large demand invariably entertains a strong dislike. I imagine, therefore, that Mr. Bishop (official analysts having in those days not been invented) so named his preparation as to afford would-be imitators as little assistance as possible.

However, about two years afterwards, Mr. Draper and others published particulars of the process. It then appeared that the principal ingredients of granular effervescent salts were tartaric acid and an alkaline bicarbonate, and that the formation into granules was effected either by slightly moistening the heated mass or—better still—by adding about 5 per cent. of citric acid to form a deliquescent citrate of soda. Having thus obtained what cooks would call the "stock," the manufacturer could add sulphate of magnesia or any required soluble salt.

From that time to this chemists can fairly assert that they have lost no opportunity of calling attention to the real composition of the so-called citrate of magnesia. Many vain efforts, too, have been made to alter the name; but the great British public declined to adopt any other, and if chemists would not supply the article, grocers were very happy to do so.

However, the matter has at last been made the subject of legal proceedings, under circumstances most unfavourable to the chemists. A sample has been got hold of which is certified by the analyst not to contain magnesia at all. The case has been heard before a magistrate, obliged to depend upon the said analyst for his facts, and actuated by a praiseworthy determination to punish severely any adulteration of drugs; and the victim singled out for exposure is a struggling beginner, avowedly too poor to secure that amount of legal talent which would inevitably have been brought into the field had a co-operative society or a west-end tradesman been attacked.

The success of this prosecution may possibly lead to others, so that a few arguments for the defence will, I hope, not be considered superfluous. Firstly, it will be advisable (I speak subject to legal correction) to show by the facts I have mentioned that, though the name is not such as a scientific man would desire, yet many other articles (soda-water and lemon and kali, for example) are and have been for many years allowed to be sold under popular names which are chemically incorrect. Let attention next be called to the usual form of the label—"Granular Effervescent Citrate of Magnesia," and let evidence be forthcoming to show that tartaric acid and an alkaline bicarbonate form the recognised basis for any granular effervescent preparation. The prosecution also will most probably be founded on the 24th section of the Pharmacy Act of 1868, which brings "articles usually taken or sold as medicines" within the scope of the Adulteration Act. The defendant in such a case may therefore point out that "citrate of magnesia" is in this country a popular summer beverage, and that it was evidently to avoid the possibility of its being used as a medicine that the compilers of the last edition of the British Pharmacopœia introduced the effervescent citro-tartrate of soda.

Now a few words as to the meeting of the Pharmaceutical Society on the 5th November. Recent legislation has done its best to place this society in the position of the official representative of the whole body of chemists and druggists; so that on an occasion like this one naturally expected prompt and decided action. A glance at the report of the monthly meeting soon dispelled any such hope. The council have deliberated, but the results of their deliberations will not be published; the officers of the Society favour the meeting with some interesting facts respecting scammony and isinglass; the speakers seem principally concerned as to how to keep themselves personally out of trouble, but pause occasionally to blame Mr. McDermott's "foolishness" in having been too poor to fight their battle for them. One figure alone shines as a bright spot in the darkness. The inventor of the unfortunate name is manly enough to avow his regret for the mischief it has done, and promises substantial pecuniary assistance to the victim. One throws aside the report with a sigh, and thinks of the vigorous corporate action which would have been instantly taken

had Mr. McDermott been a licensed victualler instead of a chemist.

In this (as in the recent "soluble cocoa" case) one could have wished that the analyst had taken a less narrow view of his duties, and had given a full report for the worthy magistrate to act upon, instead of a bare certificate of the composition of the sample analysed. However, I presume the public are chiefly to blame. They offer to public analysts salaries which one would be ashamed to give to a decent clerk, and naturally enough (analytical chemists being just as unwilling as their neighbours to serve their country for the glory of the thing) in the majority of cases really efficient analysts either decline the appointments, or make them mere appendages to and advertisements of other and more lucrative employments. As lately as November 8th, the *Times* published the names of two analysts who had been trapped into giving certificates (one at the magnificent fee of half-a-crown) that a loaf of bread intentionally adulterated with a large proportion of alum was perfectly pure!

I must not forget, in conclusion, to mention that there is a real citrate of magnesia used in a cathartic beverage in France and America. From Parrish's "Practical Pharmacy" and Dorvault's "Officine," we learn that the basic citrate of magnesia is rendered soluble by the employment of a large proportion of free citric acid, just as insoluble carbonates can be dissolved in water impregnated with carbonic acid gas. A practical French pharmacist, however, assures me that even in the presence of this excess of acid the citrate is gradually thrown down. I understand that an English chemist is now trying to make a permanently soluble citrate of magnesia; I wish him speedy success.

REPRESENTATIVE LETHARGY.

BY A PHARMACEUTICAL CHEMIST.

READERS of Mr. Disraeli's "Sybil" will remember with what richly humorous satire the author describes the reception accorded by various members of the Legislature to the delegates of the National Convention; how Bombastes Rip, who had once been of their number, offering, "provided his expenses were paid," to come up from his little native town, at the head of a hundred thousand men, and burn down Apsley House, cruelly snubbed them; how Floatwell, "one of those characters who imagine they are getting on if they keep company with some who stick like themselves," patronized them; how Kremlin, "who had only one idea, and that was wrong," dined into their ears the unutterable importance of his "external system;" and, lastly, how Wriggle, the disciple of Progress, "who went with the times, but who took particular good care to ascertain their complexion, and whose movements, if expedient, could partake of a regressive character," fooled them. But far outside politics the originals of the characters, thus cleverly caricatured, are everywhere to be found. The opinions of the layman are no longer reflected in the cleric, and the agitator's grievance speedily evaporates amid the genial warmth of office.

When last year's council retired in May, leaving behind it ruins of abortive resolutions and abandoned schemes, the CHEMIST AND DRUGGIST reminded its readers of the long famine which had prevailed; and it was just on the cards that, with the infusion of new blood, the Bloomsbury administrative would cease to be a virtual nonentity. Half a year has elapsed, and what work beyond the semi-severance of the School of Pharmacy from the Society has been, or even promises to be, accomplished? It would seem that the majority of the members in the council cannot, by any possible means, rid themselves of the idea that they no longer constitute the little managing board of a society comprising some few dozen members, meeting once a month to audit petty accounts, or enrol another subscriber. If the Pharmaceutical Council has a *raison d'être* at all, it surely lies in the fact that it is the representative in the metropolis of the interests, individual and collective, of the whole body of chemists and druggists throughout the kingdom. If presumptive provincialists not unfrequently ask to be told wherein lies a *quid pro quo* for the annual subscription of a

guinea to the Pharmaceutical Society, who will undertake to balance the account? Sloth is contagious; and, if indifference and idleness are so rife in high places, can lack of interest and inattention be marvelled at elsewhere? Local efforts, indeed, unaided but by the earnest activity of some few country members, put to the blush the half-heartedness of those who ought to lead the van; and the reports published from Manchester and Liverpool speak hopefully of provincial zeal.

Even discussions which do take place at the council table upon subjects of general interest are ruthlessly suppressed. There is this consolation, however, that unless they are more reasonable and to the point than those which do appear, it is a merciful consideration not to let them see the light. A mania now seems to have sprung up for committees, to which, after a due amount of squabbling, such matters are relegated. After a while a report is presented. Then follow resolutions and amendments and more squabbling, the end probably being that the subject is shelved for "future consideration," or, in other words, consigned to oblivion.

The tone adopted by certain members of the council at the recent evening meeting, with reference to the citrate of magnesia question, pretty clearly indicates that, like Bombastes Rip, their opinions have undergone considerable modification, and they seem strongly impressed with the idea that it will be a most diverting spectacle to witness individual members vainly endeavouring to extricate themselves from the dilemma into which they have fallen.

Surely the council might have seized the opportunity and done something towards winning confidence in the trade on an occasion like this. They have disappointed us in our earnestly expressed wish that they would try conclusions with the co-operative stores; they have failed us again in our difficulties. The camel was heavily weighted, yet it bore its load; one more straw was added, and its back broke.

We reproduce from the *Pharmaceutical Journal* a letter by Mr. John P. Catford, of 36, Princes-square, Kensington Park-road, which criticises severely, but not undeservedly, the languid action of the Council in this important matter:—

"Sir,—Prominent members of our Society have been very fond of advocating and agitating for legislative enactments, calculated to render more select and 'respectable' the pharmaceutical body in which they themselves have won, or inherited, so much credit.

"The 5th of November of this year will be memorable in the annals of our Parliament for the spectacle it afforded of the consternation and indignation of these our representatives at the turn events have recently taken; our worthy leaders are afraid of being 'hoist by their own petard!' I do not mean by this to insinuate that the indignation of the trade at large (of which the Society has now become the recognised embodiment) will lead them to do anything so revolutionary as to sweep away the old regime *in toto* and substitute a less oligarchical form of government—one less aristocratic and more representative of the average shop-keeper. Without presuming to prophesy this, I do urge that if the Council wish to remain popular they should not ask individuals to bear the brunt of such a contest as now threatens, so evidently felt by everybody as affecting themselves. Subscriptions have accumulated to an inconvenient amount, yet when the subscribers are threatened with heavy penalties by Acts which Council-men have promoted, the said Council backs out from the onus of settling the question, though that solution would be a relief to every member of the trade. We are not *all* getting our living by the leading dispensing establishments of Britain, and cannot therefore wash our hands of the matter by saying we do not care if we never sell another ounce of mag. cit.

"As far as I am personally concerned, I do not suppose I shall sell any more, but if I run foul of the Act it will be in the capacity of manufacturer (at others' dictation), and thus incurring the 'imprisonment with hard labour' which amused the meeting so on Wednesday."

We quote with satisfaction the sensible remarks of the *British Medical Journal* on this subject:—"No small stir has been created amongst pharmaceutical chemists by the imposition on a South London chemist of a penalty of £10 for selling, as granulated effervescent citrate of magnesia, what appears to have been the ordinary trade article which

passes under that name, but which is, as is well known, rather an effervescent citro-tartrate of soda with magnesia. The penalty seems to us to have been excessive, and was unquestionably imposed under a misapprehension. The public analyst piques himself on the fact that his certificate stated bare facts, without comments. But the bare fact without comments is precisely what would mislead a magistrate under the circumstances. It should have been undoubtedly stated to the magistrate, that the substance in question is in truth a well-known, perfectly harmless, and even beneficial combination, which has superseded the citrate of magnesia in ordinary use, with the knowledge and assent of chemists and medical men generally, just as sulphate of magnesia is always sold when Epsom salts are called for. It was not at all a case for prosecution; and, in adopting such proceedings, the Act is abused. It was a case of possible unintentional persecution, and we are of opinion that the fine ought to be remitted. The magistrate was clearly not in possession of the whole truth, or he would never have imposed it. The general principle, however, that a name should accurately represent the substance sold, is not less sound in pharmacy (perhaps even more so) than in any other trade; and the discussion on the subject which has arisen will no doubt lead to a modification of title. Thus the well-known, popular, and agreeable aperient and febrifuge drink, hitherto commonly sold as effervescent granulated citrate of magnesia, may properly be labelled henceforth 'Granular Effervescent Citro-tartrate of Soda with Magnesia;' or it may be more shortly known as the Citrated Aperient. It would be well that it should be introduced in the new appendix to the *Pharmacopœia* as a pharmacopœial rather than a trade article, and thus arbitrary varieties of composition would be avoided."

THE ADULTERATION ACT AND CITRATE OF MAGNESIA.

Discussion at the Evening Meeting of the Pharmaceutical Society, Nov. 5, 1878.

AFTER Mr. BARNES had read a short paper, in which he alluded to the frequent adulterations occurring in guaiacum, the conversation rapidly turned towards the Adulteration Act, and ultimately clustered round the "citrate of magnesia" difficulty.

Professor Redwood said that guaiacum resin was not perhaps a very important medicinal agent, but there was reason to believe that other articles in which impurities were more serious were also frequently impure, and therefore the whole question deserved very careful attention. Scammony, for instance, was often impure, and at the present time, particularly, as it appeared to him, it behoved pharmacists to consider the question of impurity in drugs far more seriously than they had hitherto done. Many impurities had become conventional, and were consequently overlooked, but he was by no means sure that this could be done in future; at any rate it was very undesirable to do so, and he believed it would become an absolute necessity to scrutinize more minutely than had hitherto been the practice the composition of the drugs used. In some cases such impurities were of great importance, and really affected the foundation of medical practice, and if permitted would naturally affect the character and position of pharmacists throughout the country. They, as a body, would be looked to to make some greater progress in the way of resisting all attempts at the introduction of impurities in drugs, and also of the sale of substances under incorrect names which did not strictly represent them. There were numerous substances for the sale of which druggists were liable to be punished, although they sold them under the names by which they were commonly known, and thus even imprisonment with hard labour might be their lot, as well as heavy fines, for doing things which really had become conventional acts.

Mr. BLAND said imprisonment with hard labour would be no fresh punishment to the majority of chemists and druggists, as they were pretty well accustomed to it already.

Mr. WILLIAMS thought that a sale of a drug as it came into the market, although it might contain some small percentage of woody or inactive matter, could not be treated as

that of an adulterated article, and he did not believe the Act of Parliament would extend to such a matter as the sale of guaiacum as imported.

Professor REDWOOD thought it would be very difficult to define exactly what the Act did comprehend in cases of that description. The meaning of the Act had to be interpreted by magistrates when charges were made before them, and different interpretations had been put upon it by different parties. For his own part, he considered that even in the case of a drug sold in the same state in which it was imported, if it could be clearly shown that it was adulterated, it was no exoneration to the dealer that he sold it in the same state in which he received it. It would be considered that a chemist and druggist in the present day ought to be able to distinguish between what was pure and impure, genuine and adulterated, and it would be no excuse, in a legal point of view, to say he did not adulterate it himself. If it came into the market in such a state that it was not fit for use, no druggist would be justified in using it.

Mr. WAUGH said it was very important to know how far their responsibility extended, and whether in such cases as were now referred to the responsibility was with the retail druggist or with the wholesale dealer.

The PRESIDENT was not quite prepared to say that that was the time and place in which to decide so important a question of law. He believed there was a clause in the Adulteration Act providing that a man not knowingly or willingly selling an adulterated substance was not liable. In fact, Mr. Sandford, Mr. Haselden, and himself got those words inserted. No doubt chemists ought not to buy any but good articles, and if this rule were observed a good effect would be produced. For instance, he remembered some twenty-five or thirty years ago one of the first matters brought before the Society was the adulteration of senna, and by the combined action of the chemists and druggists of that time senna came into the market in a much better state. Professor Redwood had spoken very strongly on the subject of impurities, but he had heard him say himself on a former occasion that it was impossible to find strict purity anywhere. His own impression was that a man was not liable to imprisonment or fine if he sold an article not knowing it to be adulterated.

Professor REDWOOD said a person was only liable to imprisonment with hard labour when he had adulterated an article himself or given instructions to that effect; at the same time, if he sold an adulterated article, and, being an educated man, were deemed to be capable of judging of its quality, and had not exercised that knowledge in detecting that adulteration, he would be liable to a penalty.

Mr. HUCKLEBIDGE asked the President if the question of citrate of magnesia had come before the Council that morning, and, if so, what decision had been arrived at?

The PRESIDENT said the matter had been considered, but it was in committee, and therefore the discussion would not be published. He might say, however, that the decision come to was to sell that which they knew to be pure and genuine and label it accordingly; and that they ought, if possible, to name every article according to its composition. However, the Council were fully agreed as to the injustice of the magistrate's decision in fining Mr. McDermott £10 for selling the article in question, which had been universally known and sold to the public for many years under the name of "granular effervescent citrate of magnesia."

Mr. HASELDEN said, with regard to the Adulteration Act, he was one of those who waited on the Marquis of Salisbury when the Bill was passing through the House of Lords. His impression from what passed then was that if an article were sold, the seller being ignorant of its being adulterated, he was not liable to any penalty. They now found that magistrates had convicted over and over again, entirely refusing to acknowledge that clause. The matter was especially pointed out by Mr. Sandford to Lord Salisbury, and scammony and otto of rose were specially mentioned. It would be a very hard case if a man were summoned for selling virgin scammony if it had 15 per cent. of matter in it which was not scammony resin, and therefore might be said not to be pure, especially if it contained chalk or gum, which it generally did. It was impossible for a man to carry on business and examine everything that came into his establishment, he would have to keep an assistant constantly

employed for the purpose, and of course increase his charges accordingly, which would not be to the satisfaction of the public. He should like to ask Professor Redwood his opinion of isinglass, which was, no doubt, sold to them as pure Russian isinglass, while at the same time it was frequently adulterated with gelatine. The Adulteration Act seemed to him one of the most absurd Acts ever placed before the public, and he thought it ought to be repealed.

Professor REDWOOD said that many years ago he had taken up the subject of adulteration of isinglass, and he was not aware that for some time past it had been practised. If it were so, he should certainly bring it again before the public. He should not hesitate to say that anyone selling adulterated isinglass would be liable to the penalties imposed by the Act. Where a man sold an article which had been adulterated by another, he would be liable if he were in a position such as was assumed to give him the knowledge which would enable him to judge of the quality of the article sold. In all such cases he believed that the seller would have his remedy against the man who sold him the article.

Mr. HASELDEN said he could not say positively that isinglass was adulterated at the present moment, though he suspected it was from the various prices at which it was offered. The remedy suggested by Professor Redwood against the original seller of an article at a loss of four or five days' time, and a considerable expense and uncertainty, would be a very poor consolation.

Mr. BLAND said he was rather inclined to agree with the President that that was not the time or place in which to enter into a full discussion of this question. It was well-known to many present that before the Adulteration Act came into operation he had expressed a strong opinion as to some of the results which it was likely to produce. Looking to the necessary qualifications of a man who might be able conscientiously to undertake the duties of an analyst, they could not expect to find many such men in the country, and for this reason, that it was necessary not simply to have a theoretical knowledge of chemistry, but a very extensive acquaintance with technical chemistry was also necessary, or else the analyst might fall into most serious blunders, and be the instrument of perpetrating the most grievous injustice. Looking at the different views taken by different magistrates before whom questions had been brought, and the vindictive penalties which in some cases had been inflicted, the severe remarks made by some of the magistrates, and the serious consequences, independently of the mere pecuniary result of the fine, to any person brought up on such a charge. Even if it were competent to any person who had been fined to bring an action against the person who had supplied him with an adulterated article, that would afford no compensation whatever for the very serious loss of reputation in business which might ensue. He was strongly of opinion, looking at the manner in which the Act had been carried out in many places, that the only real remedy would be to get it repealed altogether.

Mr. SANDFORD said he was one of the deputation who waited on Lord Salisbury to represent to him the hardship which the Bill as originally drawn would inflict. They did not go to him with the idea that chemists would wish to connive at the adulteration of drugs by anybody, but they told him there were certain articles brought into the market—scammony, otto of rose, and musk being particularly mentioned—which it was only possible to obtain in a state of comparative purity. The druggist had no power to do more than buy the best samples he could obtain. The Bill as it passed through the House of Commons would have rendered a druggist who sold guaiacum—the article brought under the notice of the meeting by Mr. Barnes—in its ordinary state liable to penalties, and Lord Salisbury was informed that it was absolutely necessary there should be a guilty knowledge in order to constitute an offence. Lord Salisbury, therefore, introduced into the Bill certain words making a guilty knowledge necessary but unfortunately the magistrates had construed the Bill differently; and not only so, but he found that the Court of Queen's Bench had been appealed to, and had decided that a dealer was bound to know and to be a judge of the article in which he dealt. Thus, if a grocer sold mustard, he ought to know whether it was pure or impure. That was

not the intention of Lord Salisbury when the Act was passed, though perhaps the wording was not as clear as it might have been. The Bill as amended came into his hands about two o'clock in the day, and having no time to consult any of his friends, he went to the House of Lords, and, meeting Lord Salisbury, pointed out to him its defects, and his lordship then introduced other words, to make it more clear that a guilty knowledge should be required. A few minutes afterwards he met Lord Granville, who agreed to the same course, and considered Lord Salisbury's proposed alteration sufficient for the purpose. The Bill was then produced as it now stood, and though there was a little difficulty as to the punctuation which rendered it somewhat obscure, as almost all Acts of Parliament were, he could not help thinking that those who were interpreting it were running rather wild. The decision of the Queen's Bench, in June last, was to the effect that it was not necessary to prove a guilty knowledge on the part of the seller, and whether or not that was in strict accordance with the wording of the Act, he was quite sure that it was not the intention of Lord Salisbury, Lord Eustace Cecil, or Lord Granville, when the Bill passed through Parliament. He was glad the citrate of magnesia case had been mentioned, because he knew it was in everybody's mind. Everybody knew that what was sold under that name was not citrate of magnesia, and he remembered seven years ago, when occupying the president's chair in that room, saying how much he regretted the tendency of chemists to send out articles under false names, and he then mentioned this very article as one. He then said that citrate of magnesia was a definite chemical term, and the article sold under that name had no relation whatever to it, and it was therefore their duty to discourage it. He was glad to see that the matter had been taken up since at Dundee, at Liverpool, and again at Bradford, and it had even been proposed to enter into a combination to discourage such a thing. It was not right to sell an article as citrate of magnesia which was not that substance at all, but a mere mixture of another alkali and acid. It had been called citro-tartrate of soda, but he had heard it said that it was not even that until mixed in water, and therefore it could not properly be sold even under that name. He could not help thinking that the man who had been fined the other day was most unjustly treated for selling an article under a conventional term by which it was always known. He did not think, however, they could take any action in the matter, because he believed there was no appeal.

Professor REDWOOD said a case could be carried to a higher court.

Mr. URWICK said he had been informed that a fresh hearing could be had before the magistrate. The opinion of some who read the case was that the decision was not in accordance with the facts, and that it would not be fair to the magistrate to appeal in this case until he had had an opportunity of re-considering his decision.

Professor REDWOOD said an appeal could only be had on a question of law.

Mr. SANDFORD remarked that the question in the case before the Queen's Bench was that of knowledge or no knowledge on the part of the seller. Now the citrate of magnesia case involved simply a question of selling an article by a popular name which did not properly describe it. For his own part he never lost an opportunity of telling a customer that citrate of magnesia was not the correct term. He had always felt ashamed that chemists should condescend to such a misnomer, and on that ground he did not regret the decision, because he thought it would stir them all up to do that which was right. He had heard one gentleman say that he did not care whether he sold any more citrate of magnesia or not, but he would not sell it under a false name; he (Mr. Sandford) thought there would be no fear of any falling off in the sale. Another gentleman had adopted a label saying that it was the preparation generally called citrate of magnesia, and the consequence was that he sold more even than he did formerly. Although he felt that Mr. McDermott had been badly treated, partly he thought owing to his own foolishness, he hoped that the occurrence would do good by opening the eyes of magistrates to the absurdities brought before them as adulterations. They did not want any privilege of adulteration, but simply to be protected in the ordinary exercise of their business.

Mr. URWICK said what had happened to Mr. McDermott might have happened to any one of themselves. He abominated all incorrect names, but many of them had been deprived of the sale of their own preparation of magnesia bearing genuine names by this citrate, and they had simply acted between the maker and the public. Many persons would be looking to see what was suggested at that meeting, and he hoped some decision would be arrived at. There was another question also requiring consideration. Prescriptions very often came in for a couple of pills to be taken at night with two or three drachms of citrate of magnesia to be taken in the morning. Now, what were they to do in such a case? He had always, without hesitation, put up what was ordinarily known as citrate of magnesia, feeling sure that that was intended, because if he sent the neutralized citrate of magnesia there would be a very nearly insoluble powder to be taken, which was hardly intended; but since the recent decision he hardly knew what to do. Probably the best way would be to consult the medical man or the customer. Another article of a similar character was lemon and kali, which was really lemon and natron, and not kali at all.

Mr. WILLIAMS said this was a question of names and titles. What authority were they to take as to the name—the Pharmacopœia or Mr. Bishop's label? A new label was now proposed for Mr. Bishop's citrate—"citro-tartrate of soda with magnesia, commonly called citrate of magnesia." Certainly, if they called it citro-tartrate of soda they would be as incorrect as ever, and even the Pharmacopœia preparation was not correctly named, because that was really citro-tartrate of carbonate of soda, there being no citro-tartrate of soda existing as such in the preparation. It was not until it was dissolved or taken into the stomach that it could be so called. He thought the label such as he had mentioned might be adopted without difficulty.

Professor ATTFIELD traced the discussion at the annual meetings of the British Pharmaceutical Conference, in opposition to the term citrate of magnesia, as applied to the ordinary granulated preparation of commerce. But, he said, this matter of inexplicit and inappropriate names was not so much in the hands of the chemists and druggists as the public seemed to imagine. A medical demand arose from time to time for such compounds as "effervescent iodide of potassium," "effervescent bromides," "effervescent nitrates," and such things. Such names were no doubt absurd and wrong, but the chemist supplied the desired articles according to the prescription, and was he afterwards to be fined for selling that which largely consisted of other ingredients than those mentioned on the label? The history of these things showed that generally a preparation was produced and a name given to it merely describing its leading character at the time it was discovered or introduced. Then improvements were made and other improvements followed, until it became considerably altered from its original composition. Still the public practically would not allow any alteration of the name, for the sale of an article was generally lost if its name was changed. Was the public demand for a good and perfectly definite article not to be supplied because a few people clamoured for exact names for substances of inexact composition. The name "citrate of magnesia" for the ordinary article was wrong, and chemists had long been anxious it should be altered; at the same time interpreters and administrators of the law should be given to understand that they must not condemn as adulterated a medicinal article containing other things than that by which it was named.

Mr. BISHOP said when this article was originally introduced he had no idea it would become such a household institution as it had become, and at that time people were not quite such sticklers for the exact composition of substances as had been hinted at by Professor Attfield. Still he was very sorry that he ever made the mistake of calling this article citrate of magnesia, although when first made it really did contain citrate of magnesia, and from that it took its name. His preparation still contained magnesia. He had never practised any deception, and always abhorred anything of the sort. He had now drawn up a new label, which he should be glad to have the opinion of the President and the meeting upon, and if it were approved he would introduce it, though retaining in form the old label, which

he had now placed upon something like a million and a half of bottles. He was very sorry that Mr. McDermott had got into trouble through selling this article, and should take care to see, with the aid of a few friends, that he was not out of pocket by it. He thought it was a very great pity that the learned magistrate should have made such an observation as he was reported to have made as to the composition of an article as analysed by Dr. Mutter, which contained citric acid, tartaric acid, carbonate of soda and sugar, as being injurious to the public health. This objectionable phrase had been copied into several of the newspapers, and he hoped to hear an expression of opinion that evening that it was not justified. He was not aware that law courts were the places where lawyers acquired a knowledge of medicine, and he thought if the learned magistrate would turn to his "Phædrus" and read the line in which occurred the words "*Ne sutor ultra crepidam*," it would do him good.

The PRESIDENT said he was unable in his official capacity to answer the question put to him by Mr. Bishop; it was not in his province to give a name to an article belonging to any gentleman, and he would remind Mr. Bishop that fourteen years ago when the preparation was first introduced by him he (the President) thought it a very elegant preparation. On having it examined and finding it contained so very little magnesia, he hesitated about using it, and preferred using an article of his own preparation, which he called citro-tartrate of soda, that being the nearest name by which he could describe it. He had been looking over all his own labels, and he recommended every one to do the same, and to label everything as correctly as possible. Though he could not give an official sanction to Mr. Bishop's new label, he certainly thought it a great improvement on the old one, and saw no objection to it.

Mr. BISHOP said, that as it had been stated by some persons that his preparation did not contain any citric acid, he might be allowed to remark that that article figured as an item in his business last year to the amount of very nearly £1,600, and probably he was the largest consumer of it in the country.

Mr. HUCKLEBURY wished some action could be taken by the Council in this matter, and that some rule should be laid down what this article should be called. They hardly knew what to call it. It could not be called citro-tartrate of soda. Saccharated citro-tartrate of soda with magnesia, known as effervescing citrate of magnesia, had been suggested, but that was rather a long name. Supposing persons came and asked for citrate of magnesia, and some was put up in a paper and given them, and they went away and then found they had something with another name to it, what would be the result? It had been ruled that if a person asked for coffee, and you gave him a preparation of coffee with chicory, merely putting a label on, it was no defence.

The PRESIDENT said perhaps Professor Redwood could suggest a label.

Professor REDWOOD said what he wished to impress upon the meeting was this, that whoever the article might be made by, there was in the first place a certain essential character about it, and, in the second place, there were certain non-essential characters. The essential character was that part of it resembled in composition and properties a preparation ordered in the Pharmacopœia under the name of citro-tartrate of soda, though he would admit there might be a question whether that name was critically correct. Nevertheless, it conveyed all that was required to be conveyed with reference to an article of that description, and did not at any rate give a false impression with regard to it. This effervescing preparation was essentially a compound of bicarbonate of soda with citric and tartaric acids, and when it was administered it formed what might be called citro-tartrate of soda, which was its essential character. Therefore, the name citro-tartrate of soda being given in the Pharmacopœia, he thought, as members of the Pharmaceutical Society, they would do right in following that example, and adhering as nearly as possible to that name. It would not be right, however, to adopt it without qualification, which would be as wrong as to continue the old name. He thought the name proposed by Mr. Bishop was quite unobjectionable—namely, citro-tartrate of soda

with magnesia or with magnesia and sugar. Although this might be critically objected to, still it gave a generally correct impression, and there was no deception if the article were sold under that name. He thought Mr. Bishop would take both a wise and politic step in endeavouring to bring the name as nearly as possible to represent the real nature of the preparation. He hoped the meeting would be unanimous in recommending one name, so that there might not be a variety in use all different from one another.

The PRESIDENT asked if the use of the word magnesia could not be dispensed with in reference to this preparation.

Mr. WILLIAMS said the public would have it.

The PRESIDENT said there was very little magnesia in the preparation.

Mr. BISHOP said there was more than the President imagined, and it was a most useful adjunct; in fact, the Pharmacopœia preparation was not nearly so useful; the magnesia was required as a slight laxative.

Mr. BARNES suggested "effervescing magnesia" as the name.

Mr. URWICK said he had examined Mr. Bishop's preparation and found it to contain magnesia.

Mr. UMNEY suggested the name granular effervescing citrate, known to the public as effervescing magnesia.

Mr. WILLIAMS suggested "granular effervescing saline compound."

Mr. UMNEY said in parcels in bulk they might call it "sodæ citro-tart. effervescons, B.P., with sugar, magnesia, and lemon flavour." That would correctly indicate the composition of the salt, while the simpler label could be put on for the public.

Mr. SANDFORD asked what would then be done with respect to other citrates—citrate of lithia, citrate of iron, and so on. It seemed to him they were discussing a name for Mr. Bishop's preparation, not for that of the Pharmacopœia. Mr. Bishop's composition was citro-tartrate of soda with magnesia and sugar, but in the Pharmacopœia there was no magnesia at all, and no sugar. He knew many persons sold Mr. Bishop's preparation, as he did himself, thinking it the best, but they must adopt some name which would correctly describe the Pharmacopœia preparation.

Mr. HASELDEN remarked that in his opinion the gentleman who undertook the prosecution in Mr. McDermott's case did a very nasty and unfair thing, in attacking an article which had always been known under a certain name, a popular article, and only known by its popular name. He thought that if they altered the name, the public would not know what they were going to have in future. He was as much opposed to wrong names as any one, and, fifteen years ago, writing an article in the *Pharmaceutical Journal*, on names in general, and pharmaceutical names in particular, he drew attention to the false names given to preparations which did not represent what they consisted of. He should advise them to stick to their present name, and add a little magnesia, if necessary, in the shape of sulphate. Paregoric was another name which did not represent what was sold under that name, but the public knew what was meant, and approved of it. If they did not take care, they would be interfering with the names of half the patent medicines in use. He believed if the Council represented the matter fairly, they would be allowed to retain the name without being considered as infringing the Act of Parliament, and he should like that step to be taken. Mr. McDermott had evidently been made a scape-goat of.

Mr. URWICK said he had taken a legal opinion on the matter, and was assured that if proper representations were made the name could stand as it was. It was the name given by the proprietor to an article which he had introduced, and he had a right to give it any name he liked.

Mr. SAVORY remarked that according to the report of the case which he had read, the article analysed was merely citro-tartrate of soda, without a particle of magnesia in it. Probably if it had contained magnesia, as Mr. Bishop said his preparation did, that might have made a considerable difference in the magistrate's decision.

Mr. GERARD suggested that a definite formula should be given for this preparation, and let it be inserted in the Appendix. There would then be something tangible to go upon.

The PRESIDENT said this preparation was a child of Mr.

Bishop's, and perhaps it would be the best way for that gentleman to take a case upon it. He hoped the Council would do all they could to assist him, but he did not see how they could take the initiative in the matter.

Mr. BISHOP said his difficulty was that he was constantly receiving applications from chemists in all parts of the country, asking what they were to do.

The PRESIDENT agreed that everybody must have felt the difficulty, but Professor Redwood had given his approval to the new label suggested by Mr. Bishop, and probably that would meet the case.

Mr. BLAND suggested as a label "effervescing citrate, formerly called citrate of magnesia."

Professor REDWOOD said the objection to that would be that it did not sufficiently indicate the nature of the composition.

Mr. BLAND thought one of the principal reasons for giving a particular name to a new preparation was to conceal its composition. The maker of any proprietary article was entitled to keep the nature of the composition secret.

The PRESIDENT observed that the only person entitled to take action in the present case was the party aggrieved, Mr. McDermott.

Mr. BISHOP said unfortunately Mr. McDermott had a bad case to start with, because the article sold did not contain a trace of magnesia. If he had sold his preparation he did not believe the difficulty would have arisen.

Mr. SANDFORD, in reply to a question, said he considered that Mr. McDermott had acted foolishly in that instead of putting forward as a defence the popular name of the article, he simply relied on the fact that being out of it himself, he had got it from a neighbour, and sold it in the same state as he had received it. There were special difficulties in the way of the Council taking action in the matter, Mr. McDermott not being a chemist and druggist at all.

After some further conversation,

The PRESIDENT suggested that Mr. Bishop should consult his legal adviser, and afterwards communicate with the Council.

Mr. BISHOP said that he would adopt the suggestion, and the discussion terminated.

It was announced that the next Evening Meeting would be held on Wednesday, December 3rd.



THE INVENTOR OF FEEDING BOTTLES.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—In the October number of your journal you published an article on Mr. O'Connell, of feeding bottle celebrity, in which you say that that gentleman has "derived little or no pecuniary benefit from his invention," and proceed further to suggest that "the large manufacturers who have made such good use of Mr. O'Connell's invention owe him a handsome testimonial."

In 1865 Mr. O'Connell came to me stating that he was unable to make his business pay, and asking my assistance. I, at his request, redeemed his patent from a loan society at Manchester, with whom it had been lodged as security for a loan. I took over all his stock, and engaged him at a liberal salary to manage the manufacture of feeding bottles on my account. I moreover paid considerable sums of money to endeavour to substantiate his patent, but declined to proceed further in that matter, when I found that, although ultimate success might be attained, it would only be after a course of long and troublesome litigation, for the conduct of which I had neither the time or inclination.

In 1869 Mr. O'Connell's health obliging him to give up active business, I made an agreement with him by which

he was to receive £200 per annum by way of royalty on such of his feeding bottles as I might make and sell until the expiration of his patent, and this royalty he has regularly received up to last month, when the patent expired.

I cannot be held responsible for the action of other houses, but under the circumstances I do not think that my firm are open to the censure implied by the latter part of your article.

I am, faithfully yours,

Nov. 10th, 1873.

CHARLES MAW.

THE ADULTERATION ACT.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—Will you kindly allow me to state that in any prosecutions under the Adulteration Act my duties commence with receiving a sealed and numbered packet from any inspector who brings the same, and end with my handing to him a certificate stating the composition of the article number so and so. *I never attend court unless taken there by subpoena*, and have certainly no interest whatever either in instituting or carrying on legal proceedings of any kind.

Yours obediently,

November 8.

JOHN MUTER

DISINFECTION BY MEANS OF AROMATICS.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—The theory of disinfection by means of aromatic substances is not a new one. The Egyptians—the fathers of civilization—were the first to discover the wonderful property of those substances to preserve animal tissues from decay. Their process of embalming was nothing else; by introducing fragrant gums and spices into the bodies of the dead they successfully protected them against the animalcules which usually prey upon human flesh.* They likewise introduced perfumes into their temples, not only as an homage to the divinity, but as a means of purifying the atmosphere contaminated by the presence of great masses of people. Their example was followed by all other religions, and incense smoked alike on the altars of Zoroaster and on those of Jupiter Olympus.

Criton, Galen, and Hippocrates classed perfumes among medicines, and prescribed them for many diseases; the latter is said to have driven the plague away from Athens by lighting fires of aromatic woods in the streets and squares, after all other means had failed.

Pliny discourses at length on the various therapeutical uses to which flowers and plants may be put, and the Arab physicians derived many of their remedies from aromatics.

It is true that since those times science has made great progress and discarded many antiquated notions; but it remains to be examined whether any modern facts can be adduced to show that the ancients were wrong in their estimation of perfumes as prophylactic agents. That flowers left in a sleeping apartment may produce injurious effects is well known; but this comes from the carbonic acid they evolve, and not from the diffusion of their aroma. I may, on the contrary, quote several proofs of the beneficial effects of perfumes on the human system.

When the island of Ternate was despoiled by the Dutch of its clove plantations, the island was visited by a series of epidemics which it had escaped whilst it possessed its *cordon sanitaire* of spice trees. As a more modern instance, I may state that during the various invasions of cholera the perfumers' workshops, both in London and Paris, were spared from the scourge, an advantage which they shared with the tanners, and which they owed probably to the same cause—an atmosphere strongly impregnated with aromatics, for tan is also an aromatic *sui generis*.

* The preservation of furs by means of strong aromatics, such as camphor, patchouly, etc., rests on the same principle.

It must be admitted that *evil smells* are more or less poisonous: could they not be fought by their natural antidote—*fragrant smells*. This is an important problem which I humbly submit to the serious attention of scientific men. I do not presume to solve it myself, otherwise than by my own experience, which certainly bears out the probability of the system. I may also quote here some extracts from an article which appeared sometime since in the *Courrier des Sciences*, and which seems to support my theory:—

"Why should not *perfume* be the *counterpoison* of *miasma*? And why should not then the odour of flowers be an antipestilential agent, which, by its special chemical composition, would be intended in pervading the atmosphere to combine with *miasma* or deleterious gases and neutralize them immediately.

"And when we say the *odour* of flowers, we mean the *cause* of the odour, viz., that essential oil which slowly evaporates from the calix of flowers in perfumed vapours.

"Essential oils dissolve sulphur and phosphorus, and it is well known that in many countries *malaria* proceeds from a certain quantity of sulphuretted hydrogen which mixes with the air. Yellow fever, for instance, is probably ascribable to phosphoretted gases; it is therefore natural to ask if the combination of the vapours of essential oils with those deleterious gases and others would not operate their neutralization.

"Would not those be curious experiments to make? And if they succeeded, science would have proved once more that instinct or general feeling is a guide which must not be rejected, but which only requires to be properly directed, for it is a very general and natural belief that the air is purified by perfumes.

"It must be proved that perfume is not only intended to cover the disagreeable smell of *miasma*, but to *neutralize* it altogether, and that it is not an object of luxury but an object of utility, and one of the true protectors of human health."

I can but join most heartily with the writer in his conclusions, and hope that science will one day make this interesting question a special subject of inquiry.

It remains for me to say a few words respecting the various disinfecting appliances used in combination with perfume.

The vaporizer is intended to spread aromatic fumes with great rapidity and power of extension, by means of steam, which forms its vehicle. The steam is generated in a water bath, and ascending through a sort of perforated worm it dissolves *ad infinitum* the globules of essential oil with which it is placed in contact; in fact, it may be called an inverted distillation. The application of steam to diffuse perfumes is a new principle, all atmospheric fumigation having been hitherto produced by combustion.

The vaporizer is in use at the Royal College of Surgeons during the dissections, serving to remove completely the disagreeable effluvia. It has also been used in several hospitals, and could be applied more generally, especially in crowded wards. The perfumes employed for simply sanitary purposes are those extracted from the plants of the labiate order, such as lavender, rosemary, thyme, peppermint, etc. which are of an exhilarating nature, and unable to affect the most nervous person. The *marino* vaporizer is constructed to hang in vessels like a lamp, and is useful to counteract the nauseous smell of the saloons and cabins, and thereby allay sea-sickness. It was used on board of Her Majesty's yacht and on some steamers of the Royal West India Mail Company. On one occasion, when one of the vessels was infected with small-pox, the captain used it all over the ship and found it checked the disease.

The aromatic disinfectant is a cheaper apparatus, worked with an oil lamp, and is well adapted for a sick room. Aromatic fumigations may also be effected by means of pastilles, which are troches of fragrant gums and woods, or by perfumed papers or tapes.

In conclusion, I beg to say that I shall be happy to receive at all times any advice or suggestions from scientific men tending to improve my present appliances, and shall endeavour to avail myself of them as far as practicable.

EUGENE RIMMEL.

96, Strand, London, 20th September, 1873.

CITRATE OF MAGNESIA.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—On account of the recent prosecution of a retail chemist for the sale of the so-called "citrate of magnesia," we have determined, as manufacturers, to label all such effervescent salt, when sent out in bulk, as "Sodæ citro-tart. efferves. (Brit. Pharm., 1867), with magnesia, sugar, and lemon flavour, known by the public as citrate of magnesia."

As it is undoubtedly advisable that the label to which the public has for so many years been accustomed, upon the usual retail bottle, be altered as little as possible, we would suggest that the name (for retail) be modified as follows:—"Granular effervescent citrate, known by the public as citrate of magnesia," and possibly in addition, in order more strictly to comply with the requirements of the Act, and that the public may be educated as to its true composition, it would be expedient to affix a small label to the bottle indicating that citro-tartrate of soda, sugar, and magnesia are the component parts of the salt.

Yours truly,

HERRING AND CO.

THE ORGAN OF THE GERMAN "APOTHEKER VEREIN."

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—In the last number of your esteemed periodical we found in a correspondence of Berlin a passage concerning our journal running thus:—

"The Bunzlau *Pharmaceutische Zeitung*, which has hitherto been the organ of the Association, is to be regarded as such no longer. A new organ will be established, by combining the existing *Archive für Pharmacie* with a South German publication."

This notice being erroneous, as you will see from the "contract" we have the honour to enclose, and by perusing the proceedings of the last meeting of the Association in your hand, we beg you to rectify it as soon as possible.

Yours truly,

Pharmaceutische Zeitung,

Bunzlau, 23rd Oct., 1873.

P. H. MÜLLER.

HONOUR OR PROFIT?

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—Just to show the inefficiency of the Pharmacy Act as a "protection" to the trade, may I be allowed to state a few facts. In the small town where I am in business there is a person rejoicing under the title of "Druggist and Drysalter." Needless to say he is not on the Register, though he possesses a tolerably well fitted-up shop, globes, glass cases, gold labelled bottles and drawers, etc., all complete, does a good trade in "pateuts," and most things usually found in the stock of a chemist and druggist, save, I suppose, the articles included in the poison schedule. Now, sir, what advantage have I or my fellow-chemists, Minor Associates, and that without the aid of "Muter," "Square," and "Co.," over this "Druggist and Drysalter?" Merely, I suppose, that of selling a few pennyworths of red precipitate or half drachms of opium, or dispensing some legally qualified physician's prescription, when such a *rara avis* happens to come this way. We have also one or two "Botanical Quacks," strong in lobelia and cayenne pepper, (these are on the Register), and now we are to be indulged (!) with a co-operative store, and this company has been lately deliberating on the desirability of establishing a branch for the sale of drugs, etc. Any information as to the legality of this business, through the medium of the CHEMIST AND DRUGGIST, will be very acceptable. So, in spite of Mr. Sandford's eloquent address, where is the encouragement for such persons as myself to pass the Major? Certainly there is the honour of being a M.P.S., and a conscious superiority over our friend the "Druggist and Drysalter," and for my own part I decidedly intend to go for it; but I am afraid until more protection is afforded, pharmaceutical chemists will be the exception, and not the rule.

I am yours, truly,

"RUSTIC."

THE PATENT MEDICINE LICENCE.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—Under the heading "Apathy," in your issue of last month, you stated that a meeting had been called by the National Chamber of Trade, to consider the unfair manner in which the patent medicine licence is charged, and what arrangement should be recommended for its readjustment in equity.

I am quite certain that if due notice of the meeting had been given in your Journal, and also in the *Pharmaceutical*, there would have been a good attendance, and also a most satisfactory result. Chemists in London cannot leave their business to attend meetings, except by special effort. Men with assistants, who are doing a large business, do not feel oppressed by the tax; that will account for their apathy. Men with smaller establishments, if they heard of the meeting, would be apt to leave a matter so evidently unjust to be settled by those who could better give time to attend.

The injustice of the present charge of £2 per annum on all vendors within the London postal district is felt chiefly by the most numerous small businesses in the large outside circle from three to fifteen miles from Charing-cross, and they who are the men most concerned in the meeting which has been called, have been, with very few exceptions left in ignorance of the movement.

Officers of Inland Revenue, who have to collect the tax, acknowledge its irregularity and unfair assessment. Having, like many others, long suffered quietly the excessive charge, I read with interest the recent letters in your excellent Journal, and would willingly have attended the meeting had I known of its having been called, although I live fourteen miles distant.

I do hope that you will not abandon the matter, but by kindly inserting this and other correspondence on the subject, keep alive the agitation which must eventually lead to the correction of this anomaly in taxation by the adoption of a uniform rate of 10s. or 20s. per annum.

I am, Sir, your obedient servant,

New Hampton, S.W.

THOMAS MANN.

[Our correspondent will notice that another meeting of chemists is announced for next Wednesday evening, at the office of the Chamber of Trade.—ED. C. AND D.]

COUNT YOUR CORKS.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—A few days since a smoke-begrimed individual called on us, and presented an equally unattractive business card, inscribed, "—, Cork-cutters, —, London." On inspecting the corks, which he carried with him, there was not much fault to find, although they were nothing extraordinary. Price was agreed on, and he left us four bags, each of which he declared to contain twelve gross. This, however, we found to be a "gross" falsehood, as on counting them the "product" was about nine gross and a half. In fact, one bag contained but a few over eight gross. It may perhaps be said that we ought to have counted the corks before we paid for them, but time, or rather the want of it, prevented our so doing. On writing to the parties, of course the letter was returned to us.

Yours truly,

October 22, 1873.

A COUNTRY FIRM.

THE ADULTERATION ACT.

(UNREPORTED CASES, COLLECTED BY AN IMAGINATIVE CORRESPONDENT.)

ON the 31st instant, at the metropolitan police-court, John Smith, described on the charge sheet as a pharmacist, otherwise of no occupation, was summoned for selling two-pennyworth of "sweet spirit of nitre," which, on being submitted to analysis, was found to contain not a drop of spirit or a particle of nitre. Inspector Maresnest gave evi-

dence as to the purchase of the liquid, which was supplied to him by the defendant in a bottle duly sealed and labelled "Sweet Spirit of Nitre." On being asked by the magistrate if he had anything to offer in defence of such an abominable imposition, defendant entered upon a long rambling statement, in which he was attempting to identify the spirit of "nitre" with another substance called nitrous "ether;" the magistrate, however, interrupted him with the observation that he was talking nonsense, for although he was not quite a doctor, he had a medicine chest at home, and was not such a fool as to be persuaded that "nitre," which he always gave his children for a cold in their heads had anything to do with "ether," which he felt sure was a highly dangerous and explosive compound. He considered the offence one of great enormity, and further aggravated by the defendant's impudent attempt to commit perjury, and regretted that it was not in his power to pronounce a sentence severe enough to meet the requirements of the case. As a warning to others, however, the prisoner would undergo three months' hard labour, and twenty lashes with the cat laid on in most approved style.

At the Local Sessions House, on Friday, before Mr. Justice Muddlebrain, Joshua Paythemout surrendered to bail on a charge of having in his possession for purpose of sale, with intent to defraud, a quantity of "oil of vitriol," which, having been subjected to a most careful analysis, was found to contain no "oil" or "vitriol" whatever. Mr. Sergeant Flounder appeared for the prosecution. Prisoner, who was undefended, pleaded *not guilty*. Detective Soft, being sworn, said that he went to prisoner's shop on the evening of the 5th prox., and asked to be supplied with two ounces of the best oil of vitriol. Prisoner inquired for what purpose it was to be used, and witness replied that it was for making blacking. Prisoner then served him with two ounces, telling him, in an apparently jocular tone, to mind and not grease himself with it. (At this point prisoner seemed so overcome with emotion that he had to bury his face in his pocket handkerchief.) Witness then betook himself to the borough analyst, with whom he left half the bottle full, with directions to make a complete analysis of the liquid, as he was a blacking manufacturer, and wanted to know what impurities it contained. He had carefully preserved what remained in the bottle, which he now produced for the inspection of the court. (Bottle containing about half a wine glass full of liquid was handed to the bench.) The analyst's certificate, which reported that the specimen received for examination contained ninety-six per cent. of di-hydric sulphate, with small quantities of arsenic and lead, was then put in as evidence. Sergeant Flounder, after eulogizing the characteristic acumen of Detective Soft, and shedding a tear over the depravity of human nature, as evinced in the conduct of the prisoner, proceeded to read an extract from a popular work, in which it was stated that true oil of vitriol was made alone in Germany, being there prepared by distillation from "green vitriol." He concluded an eloquent peroration by beseeching the jury to hand over, by their verdict, the wretched being at the bar to the justice, which he had himself so grievously outraged. Mr. Justice Muddlebrain then proceeded to sum up the case. He felt sure that the jury would experience no difficulty in coming to a decision upon the simple issue before them. It had been clearly proved that the prisoner had, with appalling coolness, been in the habit of supplying to his customers, in place of oil of vitriol, nothing more nor less than the compound contained in the bottle before them. The deplorable effects of the prisoner's crime had not been confined to one or even a dozen individuals, but he might safely assert that it had injured the whole community. Their boots, besmeared with the parody of blacking, compounded with the prisoner's wretched mixture, had long ceased to shine with the lustre and lubricity which they all knew oil of vitriol could alone bestow. The prisoner had, with expressive irony, described himself as a chemist, but Mr. Justice Muddlebrain would very quickly cause him to be "hoist with his own petard." (Applause from the body of the court, which the Bench winked to the usher not to suppress.) "It is a well-known fact in natural science," continued the judge, "that when water is mingled with oil, the oil will float to the bottom; and, although the evidence against the prisoner is already crushing, the jury may convince themselves by this simple test that defendant's mixture contains no oil whatever, and hence cannot be 'oil of vitriol.'" The bottle and a goblet of water were then handed to the jury, and the foreman, directed by

the Bench, proceeded to make the all-conclusive experiment. About a tea-spoonful of water had been poured in, when, with a sudden crash, the bottle flew to pieces, and its contents were scattered in all directions over the occupants of the jury box. Amidst yells of pain, and a scene of indescribable uproar, the prisoner, who seemed himself in convulsions, was removed to the cells below.



THE SALE OF CITRATE OF MAGNESIA.

Mr. Phillip McDermott, chemist, 155, Abbey-street, Bermondsey, was summoned by Mr. Doman, the Sanitary Inspector of Bermondsey, on October 31, under the Adulteration Act, for selling as citrate of magnesia a compound not containing an atom of magnesia, and therefore liable to cause injury to health, etc. Mr. Harrison, assistant vestry clerk, attended to prosecute. Mr. Doman said that on the 26th ult. he left at defendant's shop a prescription to be made up, and on his return for it he saw the defendant and purchased a quarter of a pound of citrate of magnesia, which he paid him a shilling for. He distinctly asked for citrate of magnesia, and when he received it he told the defendant he was going to take it to be analyzed. The defendant said it was the same as he received it. Witness took it to Dr. Muter, who analyzed it and gave him the certificate produced. Dr. Muter, analyst to the Vestry of Bermondsey, stated that on the 26th of last month he received a parcel from the last witness marked "Citrate of magnesia." He analyzed it, and found there was not a particle of magnesia in it. He found citric acid, tartaric acid, carbonate of soda, and a little sugar. It might be injurious to health if mixed in other medicines where citrate of magnesia was prescribed. The defendant said that when the inspector left the prescription to be made up he was out of citrate of magnesia, consequently he sent to Mr. Farmer, a neighbour, and purchased two pounds weight of him, and he sold it to the inspector just as he received it. Mr. Partridge said it was a very serious offence for chemists to mix articles with drugs not mentioned in the prescription. The consequences might be very serious, and the public must be guarded against such conduct. The defendant must pay a penalty of £10 and the cost of the analysis.

STEALING JEWELLERY.

At the Birmingham Police-court, on the 16th ult., William Sankey was committed for trial on the charge of stealing articles of jewellery to the value of £35, and a purse containing £2 15s., the property of Mr. Albert Court, chemist and druggist, Bull-street, Birmingham.

AN APPRENTICESHIP DIFFICULTY.—VIDLER v. GOLDFINCH.

At the Court of Exchequer, on November 8, an action for the alleged breach of the covenants in an indenture of apprenticeship was tried. The defendant pleaded "Not Guilty." Mr. Huddleston, Q.C., and Mr. G. Brown, appeared for the plaintiff, and Mr. Philbrick for the defendant. The plaintiff was a cabinet maker at Hounslow, and the defendant was a pharmaceutical chemist at Hendon. In 1871 the plaintiff apprenticed his son, then a lad of 17 years of age, to the defendant for a period of five years, paying a premium of £100, in consideration of which sum the defendant undertook to teach the lad his business, and to board and lodge him for the whole period of the apprenticeship. In December, 1872, the defendant having witnessed certain endearments between his wife and the lad, had turned the latter out of doors, and had refused to receive him again or to return any part of the premium. Mr. Philbrick having admitted, on the part of the defendant, that the conduct of the lad would not legally

justify the defendant in refusing to fulfil the covenants in the indenture of apprenticeship, the matter was ultimately left by consent to his lordship to decide. A verdict was then directed to be entered for the plaintiff for £33 6s. 8d.

IS "ROWLAND'S ODONTO" A PATENT MEDICINE?

At the Wandsworth Police-court, before Mr. Bridge, Mr. Joseph Delayen, hairdresser, Wimbledon, was summoned by the Excise authorities for selling patent medicines and drugs without a licence. The son of the defendant said his father was not aware that a licence was required, and the defendant, a Frenchman, who spoke very little English, said "Rowland's Odonto," which was the article he sold, was not a drug. Mr. Harris, the supervisor of Excise, said he called upon the defendant after the article was sold, for an explanation. He said he was not aware that it was subject to duty. He asked him if he would take out a licence, which would cost him £2, but he said he would not. The son said they did not sell enough in the year to cover the £2. David Collins, an officer of Excise, said that on the 27th of August last he was passing the defendant's shop when he saw "Rowland's Odonto" in the window exposed for sale. He went in and asked the defendant if he sold it. He said he did, and he gave him 2s. 9d. for a box. Mr. Bridge looked at the Act which applied to all things for the prevention and cure of any disease or complaint affecting the human body. He said "Rowland's Odonto" was merely a powder for cleansing the teeth. Every hairdresser in London sold it, but they did not take out a licence. Mr. Harris said they did. Mr. Bridge then expressed an opinion that it was not a medicament. Mr. Harris said it preserved the gums. He submitted that by the advertisement set forth that it would cure disease it came within the meaning of the Act. Mr. Bridge said "Rowland's Odonto" was no more a medicament than a piece of soap was. Mr. Harris then referred to the fact that the box of "Rowland's Odonto" bore a stamp. Mr. Bridge said persons might like to get their articles patented for the purpose of giving them additional character in the eyes of the public. It may be that Rowland was not bound to patent it. He should not convict, but he should be happy to give them a case on the point. On the suggestion of Mr. Harris, the case was adjourned for a month to enable him to lay the case before the board.



DISSOLUTION OF PARTNERSHIPS.

ALLEN and LEVERMORE, 136, Fenchurch-street, chemist, colour, metal, and commission agents. Sept. 30.
DAY and EADY, Harlow and Matching, Esqs., surgeons. Sept. 29.
DUNCAN and WADE, Richmond, surgeons. Oct. 20. Debts by Thomas Duncan.

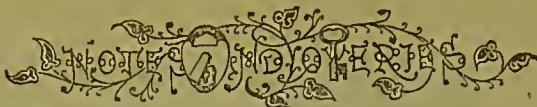
DIVIDEND DECLARED.

SHARPLES, GEORGE W. (Liq.), Blackpool, chemist. 1st div. 10s.; J. Hadman, at Charley, Son, and Finch's, Blackpool.

LIQUIDATIONS BY ARRANGEMENT OR COMPOSITION.

Notices of first meetings have been issued in the following estates. The dates are those of the petition:—

BATTY JOHN, trading as John Batty and Co., 6, North Church-side, Hull, druggist. Oct. 20.
BERRY, NEWTON, Metheringham, Lincolnshire, chemist. Nov. 3.
CLARKE, JOHN, Sibbury, Worcester, chemist. Nov. 8.
COOKSON, FREDERICK, Rainhill, assistant, late Ironbridge, chemist. Oct. 27.
FLETCHER, JOSEPH THOMAS, Woking, Surrey, surgeon. Oct. 16.
GIBSON, JOHN CHARLES, Droitwich, Worcester-shire, surgeon. Oct. 29.
HESDON, FREDERICK ANTHONY, North Walsham, Norfolk, surgeon. Oct. 17.
HOLROYD, SAMUEL, Newton-le-Heath, Manchester, manufacturing chemist and druggist. Oct. 7.
HOPKINS, WILLIAM, Booth-street, Wandsworth, surgeon. Nov. 6.
JEVENS, JOHN, Bromley-by-Bow, and Plaitow, manufacturing chemist. Sept. 26.
LEVENEIT, ALEX R., Line In, veterinary surgeon. Oct. 6.
LEGG, FRANCIS ALBERT, Canal street, Derby, chemist. Nov. 8.
TAYLOR, THOMAS, Bloxwich, Stafford, chemist and seedsman. Nov. 7.
TVAH, WILLIAM HENRY, Knarborough, chemist. Oct. 14.
WOODHOUSE, WILLIAM, Ambleside, Westmoreland, chemist. Oct. 14.



READERS will much oblige if they will aid in making this page useful and interesting. As we have previously stated, nothing received after a morning of the 10th can have attention here until the following month. Friends who do not find replies to their inquiries, will please accept this intimation.

A. L. T.—A chemist and druggist once registered, can enter into business at any time, unless, of course, his name has been erased from the Register. If such should have been the case in respect to your friend, it is possible that on application to the Registrar, 17, Bloomsbury-square, the name would be restored.

J. Rushton.—We believe that Messrs. Fearnicombe and Co., Phoenix-works, Wolverhampton, make little ice machines, such as you require.

F. Prentice (Janesville, Wis., U.S.).—The abundance of matter in our present issue in references to granulated salts, will doubtless furnish the information you require. Note especially Mr. Huskisson Adria's paper.

Inquirer, (Somersetshire), asked us last month for a formula for a certain Devonshire oil for cattle. We are now able to offer the recipe.

Sapo Mollis, lb. j. Solvs in Aqua Bullisante, Cj. Adde Bole Armen. 3jss. vcl. q. s.

℞ Sp. terebinth., Oss.
Liq. vol. c. c., 3j.
Tinct. camph., 3ss.
Tinct. opii, 3ss.

Solutio ut. supra. a Ojss. M.

Our information unfortunately omits the dose, but our correspondent can no doubt arrange that.

A Subscriber asks for a formula for "a white skin colour for the shop window with a pearly lustre." He has seen such. We imagine he refers to the nitrate of cobalt solution, very pale. Can anyone give definite information?

J. T. S.—"Youatt on the Dog" (Longmans) 6s.

T. O. M.—Your first question is unintelligible. Please give us further particulars. (2) To prepare rabbit or hare skins for chest protectors is a business that can only pay on the large scale. First the skins are dried; then they are placed in tubs with a little salt butter, and trodden by men's feet until they are supple; then sewn up with the skin inwards; then well greased, trodden, and "fleshed." After that they are again trodden with sawdust to remove the grease, and finally, beaten, combed and finished. (3) Magic Neuralgic Tincture may be made in a hundred different ways. If to be taken inwardly it should be an iron tonic. Citrate of iron with five drops of tinct. belladonnae, B.P. in each dose is a good remedy. For direct application, mixtures of laudanum, camphor, ether, and pellitory, are recommended. (4) The "Modified man" (your expression, not ours) is allowed by courtesy to place himself on the same footing as a "Miner man." He may call himself "chemist and druggist by examination of the Pharmaceutical Society."

Rata.—Redwood gives seven formulas for a green colour in show bottles. We are informed this best is No. 6. "Dissolve sulphate of copper in water and add nitric acid until the required colour is produced."

M. A.—AMALGAM FOR ELECTRICAL MACHINES.—

Tin 2 parts.
Zinc 3 "
Mercury 4 "

The inside of a wooden box is sprinkled with fine chalk, also the inside of its lid. The mercury (heated) is first poured into the box. The zinc and tin, melted together, are then poured into the box and well shaken with the mercury therein. When the amalgam is cool, it is finely pulverized in a mortar, mixed with lard to the consistence of paste, and may then be applied to the rubber.

G. W. P.—Professor Hunt gives the following formula for albumenized paper to be employed dry as a modification of the process of M. Niopec de St. Victor:—Beat into a froth the whites of eggs to which a saturated solution of iodide of potassium and bromide of potassium has been added, in the proportion of thirty drops of the former and two drops of the latter for the white of each egg. Let the mixture stand until the froth returns to a liquid state, filter through clean muslin, and collect the albumen in a large flat vessel. On this lay the paper to be prepared, and allow it to remain some minutes, when it has imbibed the albumen lift it up by one corner. Let it drain and lastly dry by suspending it with pins to a line or cord across the room. (2.) For the future, the subscription to the CHEMIST AND DRUGGIST, 10s., will include the diary at the end of the year, all post free.

W. P.—Copland's "Abridged Dictionary of Practical Medicine" (Longmans), 36s., is perhaps the most complete work as a guide to counter-prescribing. For veterinary practice, we can recommend Boasley's "Druggists' Receipt Book;" as a useful collection of formulae (Churchill), about 6s., and Spooner's "Veterinary Art" (J. J. Griffin and Co.) 3s., or Blaine's "Veterinary Art" (Longmans) 18s.

COMPOSITION POWDER.—Some chemists have asked through our columns for the formula of an article sold in certain parts of the country under the above title. We have been favoured with the following replies: Mr. Robertson, of Peebles, sends two formulae extracted from Dr. Coffin's "Guide to Health."

℞ Bayberry	}	aa 3iv	or	℞ Bayberry	}	3iv
Pinus Canadensis			Pinus Canadensis			
Ginger			Ginger			
Golden Seal			Cayenne			
Sassafras			Cloves			
Cayenne	}	aa 3ij		}	aa 3i	
Cloves						

Mr. A. W. Tsst, of Camden, New Jersey, U.S., sends us a formula for a similarly named article, considerably sold in the United States, which it will be noticed, contains much the same ingredients as the others. 2 lb. condensed bayberry root bark, 1 lb. condensed bark of hemlock, 1 lb. condensed ginger, 2 oz. condensed cloves, 2 oz. condensed cayenne pepper. Mix. Dose, a teaspoonful in a teacup, two-thirds full of boiling water. The hemlock, Mr. Test adds, is generally omitted on account of its too great astringency.

Plumbi will be glad if any of our readers can furnish the correct formula for "Liq. Ferri Phosph. Magn. (Lightfoot)."

A Lonely Apprentice.—As you "know nothing whatever" of the subjects, we should advise you first of all to procure the "Science Primer of Chemistry," by Professor Roscoe (Macmillan and Co.) 1s. Read each chapter carefully, and, if possible make each of the experiments—which can all be performed with the simplest apparatus—as you go along. When you have mastered this little work, you will find that you have made considerable progress in the first steps of chemistry. You can then begin Roscoe's "Elements" (Macmillan) 4s. 6d.; or if you wish to apply your knowledge more particularly to pharmacy, Attfield's "Chemistry" (Van Nostrand) 12s. 6d. would be more adapted to your purpose. With regard to botany, we should recommend you during the winter months, when practical work out-of-doors is limited, to make yourself familiar with the elementary structure of plants, and the principles upon which the natural system of classification is based. You might commence with Professor Oliver's "Lessons in Elementary Botany" (Macmillan and Co.), 4s. 6d., and afterwards provide yourself with the new edition of Beutley's "Manual" (Churchill), 14s. Proceeding in this way you will be prepared, when spring comes, to go into the fields, and with hemlock foxglove, and wolfsbane, around you, illustrate your text-book with living specimens. If, as may perhaps be the case, you should get puzzled at first over what you read, don't be discouraged. Try all you can to surmount the difficulty yourself, and then if you are not successful and there is no one at hand to help you, write to us again.

Sigma.—The "Lightning Paper," of which you sent us a specimen, is prepared by treating unsized paper with strong nitric acid, quickly washing out excess of acid with water, and drying. This renders the paper highly inflammable. An alcoholic solution of chloride of strontium is then prepared, and the paper floated on it in a bath. After a short time it is removed, and when dry is fit for use. We are not acquainted with the substance termed "Lactur," and can find no mention of it in any chemical work. The following formulae, which give brilliant colours, may be useful to you:

RED FIRE.	
Dry strontium nitrate	800 grains.
Sulphur	235 "
Potassium chlorate	200 "
Lamp-black	50 "
GREEN FIRE.	
Dry barium nitrate	450 grains.
Sulphur	150 "
Potassium chlorate	100 "
Lamp-black	25 "

The strontium or barium salt, the sulphur, and the lamp-black must be finely powdered and intimately mixed, after which the potassium chlorate should be added in rather coarse powder, and mixed without much rubbing, with the other ingredients. They should be prepared only when wanted for use, as like other compositions of the kind they are liable to spontaneous ignition.

J. S.—Several methods have been adopted for bleaching tallow. In one process the colouring matter is oxidized by chromic acid. One pound of bichromate of potassium in solution, is mixed with two pounds of sulphuric acid, previously diluted with about two gallons of water. This mixture is incorporated with about two ewt. of tallow at a temperature of 100° Fahr. in a wooden vessel. After this the fat is washed with warm lime water, to which a little solution of chlorinated lime may be added. Arsenic acid is now also largely employed as an oxidizing agent. For further information we should recommend you to consult Ure's Dictionary of the Arts and Manufactures."

A. B. D.—

R Vin. ipecac., 3j
Tinct. scille, ʒss.
Sp. æth. nitrosi, ʒij.
Potas. iodidi, ʒss.
Infus. senegæ, ad. ʒiv.

The spirit æth. nit. almost invariably contains traces of free nitrous and other acids, which in a mixture such as the above, would liberate iodine from its potassium salt. To obviate this, you should first neutralize the nitrous ether with a little bicarbonate of sodium.

Vic. 35.—asks if he is liable under the Adulteration Act for selling Sulph. Magn. for "Epsom salts," and Ferri Sesquioxid. for "Carbonate of Iron." Perhaps the policemen and magistrates of his district would be satisfied if our correspondent were to add to each label the exact chemical composition in symbols and atomic weights.

J. A. C.—A respectable wholesale druggist would give you better advice than we can; but we fail to see how you could carry out drugs to India and sell them at a fair profit at much lower price than an export house here. Your best plan, we should think, would be to take a few samples of novelties with you and take orders on commission. Look through our advertisements, you will find plenty of suitable goods there.

J. P.—We are much obliged for your compliment as to the excellence of our replies, but we dare not venture on a prescribing business in these columns.

Subscriber (Chester).—According to legal interpretation of the Adulteration Act, the retailer of an adulterated article is liable to a fine, never mind how innocent he may be in the matter. It is probable that a convicted tradesman would have his remedy against the wholesale supplier by a civil action.

Ignoramus.—Get Southall's cabinet of specimens of Materia Medica.

Linnet.—The following is a good Cherry Tooth Paste:—

℞ Sol. cocci, as under, ʒxvj.
Mellis, ʒiv.
Cretæ prep., ʒxxxv.
Pulv. Iridis, ʒij.
Pulv. Cassia, ʒi.

LIQUID COCHINEAL.

Pulv. Cocci, Pot. Carb., āā ʒj. Aq. ʒxxx. Boil ten minutes, adde Pot. Btart. ʒj. Alum ʒss, ft. ʒxvj. Our correspondent also asks for a good arca nut tooth paste. Will anyone favour him?

M H.—

℞ Hyd. subchlor.
Pulv. sacch., āā gr. vj.
Antim. sulph. precip., gr. j.

We cannot satisfactorily account for the above becoming damp when kept in a well-stoppered bottle. Have you noticed any change in the colour of the tincture, or other evidence of decomposition? Sulphurated antimony is such an indefinite compound, that it is impossible to predict what would occur when acted upon by sugar or calomel. Sugar as you know, will, under certain conditions, quickly reduce salts of mercury. Remembering this, and also that the antimony contains some combined water, you may perhaps find a clue to the changes you have observed.

Cinchona.—We should recommend you to apply to Mr. W. R. Loftus, 146, Oxford-street, who publishes a work called the "Brewer" (3s.), also Brewer's Almanac annually. Black's "Manual of Brewing," published by Longmans (about 21s), was written some twenty years ago, but, we believe, is the only recognised standard work.

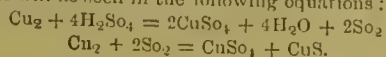
Deronian.—We always endeavour, to the utmost of our ability, to furnish correspondents with the information they seek, and are never very strict in limiting our range of subjects. We think, however, you have rather over-estimated the stretch of our capacity, and we must sorrowfully leave your queries unanswered. Winter cabbages don't grow much in Cannon-street and we have not as yet kept dormice in our office; so that we can hardly be an authority on either point. Try the editor of your local paper.

Alpha.—The following will form a good cold cream, and if carefully prepared, you will not find the water separate:—

℞ Cera alb.
Cetacei, āā ʒj.
Ol. Amygd. pallid, ʒvj.
Aque rose, ʒix.
Otto de rose, q.s.

Melt together the oil, spermaceti, and wax, by means of a water-bath; then gradually add the rose-water, and stir assiduously till nearly cold; then add the perfume.

Chemist.—In the Pharmacopœia there is no direct process given for the preparation of sulphate of copper. The best method of preparing it on the small scale and pure, is to dissolve cupric oxide in sulphuric acid—for if copper itself is used, there is a loss of both metal and acid; the sulphur dioxide evolved in the process, converting some of the former into sulphide, as will be seen in the following equations:—



B. P.—A compound liquid extract of sarsaparilla of the same strength as the Pharmacopœia extract, that is to say, containing in one fluid ounce the soluble matter of two ounces of the root, can be prepared as follows:—

℞ Rad. sarsæ Jam. (cut transversely), ʒxvi.
Sassafras (sliced)
Llg. gualaci (rasped)
Rad. glycyrrh. (bruised), āā ʒij.
Cort. mezerei (cut), ʒj.
Spirit rect., ʒj.
Aque destill., Ovj.

Digest the solid ingredients in three pints of the water at a temperature not exceeding 160° F. for six hours, and decant the clear liquor; digest the residue in the remainder of the water at the same temperature for six hours; strain and press; mix the liquors, filter, evaporate in a water-bath to seven fluid ounces, and when cold add the spirit.

Trade Memoranda.

Mr. Cumine, lato of Southport, has succeeded Mr. Knowles, of King's Lynn, the latter gentleman removing to Reading

Mr. Kay has taken the business lately carried on by Messrs. Jonas and Henderson, chemists, Crewe.

Mr. Barry has taken the business lately carried on by Mr. Palin, chemist, High-street, Sunderland.

Mr. Jackson, of Hartlepool, has succeeded to the business formerly carried on by Mr. Hudson, of Hartlepool, who is a bankrupt.

Mr. Clarkson has succeeded to the business lately carried on by Mr. Corner, of West Hartlepool, who has retired from the drug trade.

Mr. Whitby, the perfumer, of Worship-street, is just now showing a very handsome collection of toilet vases and perfume cases. An entirely new one, which he calls the Grand Duchess Marie, is very alluring, both as to form and style. His cheap perfumes are more marvellous. A fancy bottle, with some scent, a cork, and a label, to sell at a penny, is as low as one can expect in these times.



THE drug market has been adversely affected by the dearth of money, which can only be had at the almost prohibitive rate of 9 per cent. This condition of affairs is but the natural outcome of the American panic, which appears to have been unusually severe, and the perpetual drain of our money by the Germans. It matters not very much to us whether the "scare" on the other side has resulted from reckless investments in railway shares or is traceable to the evils of an inconvertible currency. The fact remains that we have the benefit of the financial agitation in a discount rate which acts as an effectual extinguisher to business enterprise. For how can it be expected that money should be let go in purchases as freely when it is at 9 per cent. as at 3. In the drug auctions, buyers have taken only such parcels as were necessary to supply their immediate wants, and there have been no attempts at speculative coups in any of the favourite staples.

SOCOTRINE and EAST INDIAN ALOES have been in languid demand, but Cape have been remarkably firm. A parcel of 118 cases, recent import, was taken at auction on the 23rd ult. at 32s. to 40s. per cwt., according to quality.

BALSAMS.—Copaiba is in fair supply, but the same cannot be said of Canada, which for some time past has been a scarce article. It is stated that the paucity of supply results from the disinclination of the Canadian peasants to collect it, the return being inadequate. But we cannot accept this reason unreservedly, as at this time last year supplies were fair and the balsam was fetching in this market 1s. 6d. per lb. The

value is now 2s. 9d., and its collection should therefore be much more remunerative. We attribute the scarcity to deficient yield rather than to defective harvesting. Peru and Tolu remain unchanged.

CAMPHOR is held firmly, and the stock here is somewhat limited, being about 3,000 cwt. less than last year. At last sales none was put forward, and it is likely that an advance in price will shortly be established. Present value of good China is 75s. per cwt.

CARDAMOMS have been and continue very quiet. Malabar at auction were completely neglected, and a few cases of good Aleppy alone found buyers at 4s. 11d.

OPIMUM.—On the 23rd ult. 84 cases of Turkey were put forward, and taken back at prices ranging from 14s. to 28s., according to quality. Almost all the opium which is consigned to this market passes through the hands of one firm of brokers, whose action with regard to the drug is perfectly intelligible, because consistent. They offer the opium at public auction to feel the pulse of the market, and not to sell offhand. Private bargains are the order of the day in the opium trade. Such being the case, there is always some obscurity as to the exact position of this important staple. However, from what we can gather there is a probability of higher prices, and our advice may be formulated thus, "go in and buy." Telegrams from India are to the effect that there is great drought, and a famine is impending. The opium crop of Behar is said to be already ruined, and the vast Chinese market must be satisfied. Failing the Indian drug, the Turkish will find its way to the treaty ports of China, and there will be corresponding scarcity in European markets. Looking well ahead, we are justified in concluding that there is a lively time in store for opium.

GUMS.—Large parcels of Turkey Arabic have been offered, but without attracting buyers. Siam Benjamin is scarce, and held at firm rates, but Sumatra has been freely offered, and for the most part bought in at former prices. Assafetida is firm, gamboge and myrrh steady, and both ammoniacum and olibanum firmly held. Supplies of fragrant are mostly of low quality, which do not command attention. Good white flaky gum dragon is disposed of without difficulty at high prices.

ESSENTIAL OILS.—Citronelle is a trifle firmer, aniseed lower, and cassia quoted at 5s. 3d. to 5s. 6d. In America attention was recently drawn to the muddy appearance which this oil sometimes presents. Holders immediately took fright, and asseverated that it was "always imported pure, and sold in original packages." The originality of the packages (tins) we do not dispute, but have ourselves often seen an article passing muster as cassia oil which indisputably possessed few of the characteristics of the genuine article, such as brightness, heaviness, and good flavour. Bergamot and lemon maintain their value. We note that a new make is being pushed in America. The "Pirandello" brand of lemon, bergamot, and orange is recommended. The super-excellence of these oils is summed up in the assertion that "they are warranted to be pure expressed oils, with no distilled oil in them." American peppermint of all brands is very scarce and enhanced in value. 150 cases, H. G. Hotchkiss mark, recently sold privately at 17s. 6d. per lb. Otto de rose is selling at a moderate price, and the Adrianople rose harvest has yielded well.

VANILLOES.—Prices are maintained, and the scarcity seems to preclude the hopes of reduced rates. We may mention incidentally that attempts are being made to cultivate the vanilla plant in the Punjanb. The sources of supply are now Mexico, Mauritius, and Réunion, and as the plant is a most delicate one, the crop almost invariably fails in one of these places. We trust that Indian vanilla may be known in our market shortly.

ROOTS.—Rhubarb and ipecacuanha are unchanged, and Jamaica sarsaparilla has again appeared at auction in plentiful supply. Gentian, orris, and colombo are obtainable at former prices.

SPICES.—The only staple appreciably affected during the month has been pepper. This spice has been the medium of considerable speculative operations. The little Malay State of Acheen, to the North of Sumatra, is the great producing country of the spice, and the Dutch are just now engaged in its subjection or conquest. Consequently a

strict blockade of the coast is kept up, and no pepper can find its way to the different markets *via* Penang. A few weeks since a report was current here that the Acheenese had set fire to the pepper vines, and immediate speculative purchases followed, in all about 1,000 tons changing hands on the spot and afloat at an advance of about 3d. per lb. Subsequently the excitement decreased, and at the close the market is rather quiet but firm. It is pretty certain that the spice will become enhanced in value somewhat appreciably before the conquest of Acheen is an accomplished fact.

CHEMICALS.—The market has experienced a flat time, the high discount rate being to a great extent the cause. Chemical manufacturers have doubtless been pondering on the risks attending the sale of "citrate of magnesia" (so called), and if not the sooner they begin to do so the better. Citro-tartrate of soda has long been dubbed citrate of magnesia, and the infallible Adulteration Act has been applied to visit the offence of the misnomer on a retail vendor. We cannot go into the merits of the justification question here, but manufacturers will do well to note the incident alluded to. Citric acid is slightly dearer, and is now worth 4s. 6d. per lb. Tartaric, of English make, has been fetching 1s. 7d., and in oxalic fair business has been transacted for delivery over all 1874 at 7½d.; present value is 7½d. Cream of tartar is a trifle easier, and selling at 11s. per cwt. Borax is being refined on an extensive scale in California, where large deposits of the salt have latterly been brought to light. The American refined article is now competing in our market with that of home make, 228 cases having been put up at auction on the 8th inst., and withdrawn. English refined is worth 95s., and has been selling at that price throughout the month.

NITRATE OF SODA.—The Peruvian monopoly scheme has, we understand, been again postponed, an export duty being placed on the product in the meantime. The production has greatly increased of late, and in the Province of Tarapaca alone (the chief producing district) it appears there are twenty-three works in operation, each turning out 10 to 20,000 quintals per month, and twenty-two works each producing from 1,000 to 8,000 quintals per month. The successful results already obtained have, it appears, stimulated other firms to go into the trade, and it is said that there are twenty new works about to be opened, the production of which is estimated at 3,100,000 quintals per annum. The monopoly scheme of the Government has already been announced by us, and denounced into the bargain; and we trust its postponement may simply be the prelude to its abandonment. Nitrate of soda is used largely here in the sulphuric acid manufacture, as well as for agricultural purposes; but its abundance has recently depressed the price, and it is now obtainable at 13s. 3d. to 13s. 9d. per ton.

QUININE maintains its firm aspect. The recent Government contract for 40,000 ozs. was taken, we understand, by Howard and Pelletier jointly at 9s. per oz.—delivering mostly forward.

MERCURIALS are again very much dearer, and quicksilver has reached quite an alarming figure. Last month we quoted it £16 per bottle, and it is now held in second hands at £21; but even at that price it can only be bought in small lots. "The Baron" is putting the screw on with a vengeance, but he has the game in his own hands, and the country chemist who is expected to sell the same quantity of white precipitate now as formerly for a penny, must "grin and bear it."

OILS.—Cocoa-nut is firmer, and Ceylon on the spot sells for £32 10s. per ton, the price for arrival being £33. Cochin of fine quality commands £38 10s. to £39. The scarcity of palm-nut kernels, the oil from which has for years past been used as a substitute for low description of cocoa-nut oil, as Sydney, Ceylon, &c., is tending to raise the value of such oils.

PALM.—Fine Lagos is quoted £38 per ton, but supplies may soon fall off, consequent upon the war on the West Coast of Africa. We should say to buyers of palm oil operate at once.

OLIVE OILS are not so readily saleable. Mogador is worth £40 10s., and Malaga £43 to £43 10s.

TURPENTINE.—American has given way, and is now procurable at 31s. 9d. to 32s. per cask. PETROLEUM also shows less activity, and may be bought in any quantity at 1s. 1½d. per gallon.

Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mining-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.

1873.

1872.

ACIDS—	s. d.	s. d.	s. d.	s. d.
Acetic	per lb.	0 4 to 0 0	0 4½ to 0 0	
Citric	per lb.	4 6 .. 0 0	4 5 .. 4 6	
Hydrochloric	per cwt	4 0 .. 7 0	4 0 .. 7 0	
Nitric	per lb.	0 5 .. 0 5½	0 5 .. 0 5½	
Oxalic	per lb.	0 7½ .. 0 0	0 11 .. 1 0	
Sulphuric	per lb.	0 0½ .. 0 1	0 0½ .. 0 1	
Tartaric crystal ..	per lb.	1 6½ .. 1 7	1 7 .. 1 8	
powdered ..	per lb.	1 6½ .. 1 7	1 8 .. 0 0	
ANTIMONY ore	per ton	230 0 .. 250 0	360 0 .. 400 0	
crudo ..	per cwt	40 0 .. 42 0	33 0 .. 40 0	
regulus ..	per lb.	0 0 .. 0 0	0 0 .. 0 0	
star ..	per lb.	57 0 .. 58 0	70 0 .. 75 0	
ARSENIC, lump	per lb.	20 0 .. 20 6	18 6 .. 0 0	
powder ..	per lb.	10 3 .. 10 6	8 3 .. 8 6	
BRIMSTONE, rough ..	per ton	127 6 .. 145 0	145 0 .. 147 0	
roll ..	per cwt	10 0 .. 10 6	10 0 .. 10 3	
flour ..	per lb.	12 0 .. 12 6	11 6 .. 12 6	
IODINE, dry	per oz.	1 3 .. 0 0	1 7 .. 1 8	
IVORY BLACK, dry ..	per cwt.	8 6 .. 0 0	8 6 .. 0 0	
MAGNESIA, calcined ..	per lb.	1 6 .. 0 0	1 6 .. 0 0	
MERCURY	per bottle	420 0 .. 0 0	255 0 .. 0 0	
MINIUM, red	per cwt.	24 6 .. 25 6	21 3 .. 21 6	
orange ..	per lb.	35 6 .. 0 0	31 6 .. 32 0	
PRECIPITATE, red ..	per lb.	6 1 .. 0 0	4 3 .. 0 0	
white ..	per lb.	6 0 .. 0 0	4 2 .. 0 0	
PRUSSIAN BLUE	per lb.	0 0 .. 0 0	0 0 .. 0 0	
SALTS—				
Alum	per ton	175 0 .. 185 0	170 0 .. 175 0	
powder ..	per lb.	195 0 .. 0 0	175 0 .. 180 0	
Ammonia:				
Carbonate	per lb.	0 7½ .. 0 7½	0 7 .. 0 7½	
Hydrochlorate, crude,				
white	per ton	650 0 .. 0 0	640 0 .. 0 0	
British (see Sal Ammoniac)				
Sulphate	per ton	360 0 .. 365 0	410 0 .. 420 0	
Argol, Cape	per cwt	87 0 .. 96 0	76 0 .. 90 0	
Red ..	per lb.	75 0 .. 85 0	65 0 .. 86 0	
Oporto, red ..	per lb.	32 0 .. 0 0	32 6 .. 33 0	
Sicily ..	per lb.	52 6 .. 57 6	67 6 .. 70 0	
Ashes (see Potash and Soda)				
Bleaching powd. ..	per cwt.	11 0 .. 0 0	12 6 .. 0 0	
Borax, crude ..	per lb.	40 0 .. 85 0	55 0 .. 75 0	
British refined ..	per lb.	95 0 .. 0 0	100 0 .. 0 0	
Calomel	per lb.	5 8 .. 0 0	3 10 .. 0 0	
Copper:				
Sulphate	per cwt.	32 9 .. 33 0	32 0 .. 32 6	
Copperas, green ..	per ton	60 0 .. 62 6	60 0 .. 62 6	
Corrosive Sublimate ..	per lb.	4 11 .. 0 0	3 3 .. 0 0	
Cr. Tartar, French, p. cwt.	per cwt.	110 0 .. 111 0	107 6 .. 110 0	
brown ..	per lb.	95 0 .. 100 0	94 0 .. 105 0	
Epsom Salts	per cwt.	5 9 .. 6 3	5 9 .. 6 3	
Glauber Salts ..	per lb.	4 6 .. 5 6	7 6 .. 0 0	
Lime:				
Acetate, white, per cwt.	per cwt.	14 6 .. 21 0	14 0 .. 22 6	
Magnesia: Carbonate ..	per lb.	42 6 .. 45 0	42 6 .. 45 0	
Potash:				
Bichromate	per lb.	0 8½ .. 0 0	0 8½ .. 0 0	
Carbonate:				
Potashes, Canada, 1st	sort	per cwt.	38 0 .. 36 6	
sort	per cwt.	38 6 .. 0 0	38 6 .. 0 0	
Pearlshashes, Canada, 1st	sort	per cwt.	47 0 .. 47 6	
sort	per cwt.	47 0 .. 47 6	53 0 .. 0 0	
Chlorate	per lb.	1 2½ .. 0 0	1 9 .. 1 10½	
Prussiate	per lb.	1 3 .. 0 0	1 5½ .. 1 5½	
red ..	per lb.	2 10 .. 2 11	3 1 .. 0 0	
Tartrate (see Argol and Cream of Tartar)				
Potassium:				
Chloride	per cwt.	3 0 .. 0 0	9 9 .. 10 0	
Iodide	per lb.	19 6 .. 0 0	28 0 .. 0 0	
Quinine:				
Sulphate, British, in	bottles	per oz.	9 2 .. 9 6	
Sulphate, French ..	per lb.	9 6 .. 0 0	3 0 .. 0 0	
Sal Aectos	per lb.	0 11 .. 0 11½	1 2 .. 0 0	
Sal Ammoniac, Brit. cwt.	per cwt.	44 0 .. 45 0	48 0 .. 49 0	
Saltpetro:				
Bengal, 6 per cent or	under	per cwt.	23 0 .. 24 0	
Bengal, over 6 per cent.	per cwt.	22 0 .. 22 9	27 0 .. 28 6	
British, refined ..	per lb.	28 0 .. 28 9	26 6 .. 27 3	
Soda: Bicarbonate, p. cwt.	per cwt.	17 6 .. 0 0	32 0 .. 32 9	
Carbonate:				
Soda Ash	per deg.	0 2½ .. 0 0	17 9 .. 18 0	
Soda Crystals	per ton	122 6 .. 125 0	0 3½ .. 0 0	
Hyposulphite	per cwt.	16 6 .. 17 0	135 0 .. 0 0	
Nitrate	per cwt.	13 0 .. 14 0	0 0 .. 0 0	
SUGAR OF LEAD, White	cwt.	47 0 .. 48 0	14 9 .. 0 0	
			44 0 .. 0 0	

1873.

1872.

SUGAR OF LEAD, Brown, cwt.	s. d.	s. d.	s. d.	s. d.
SULPHUR (see Brimstone)	33 0 to 34 0	30 0 to 30 0		
VERDIGRIS	per lb.	1 1½ .. 1 6	1 1½ .. 1 2	
VERMILION, English ..	per lb.	5 6 .. 0 0	3 8 .. 3 10	
China	per lb.	4 3 .. 0 0	3 7 .. 4 0	
DRUGS.				
ALGAE, Hepatic	per cwt.	80 0 .. 200 0	160 0 .. 240 0	
Socotrine ..	per lb.	110 0 .. 320 0	120 0 .. 400 0	
Cape, good ..	per lb.	30 0 .. 40 0	30 0 .. 32 6	
Interior ..	per lb.	19 0 .. 29 0	25 0 .. 29 0	
Barbadoes ..	per lb.	80 0 .. 200 0	72 0 .. 200 6	
AMBERGRIS, grey	oz.	35 0 .. 42 6	20 0 .. 27 0	
BALSAM —				
Canada	per lb.	2 6 .. 0 0	1 9 .. 1 10	
Capivi	per lb.	2 11 .. 0 0	2 0 .. 2 3	
Peru	per lb.	8 6 .. 0 0	9 2 .. 9 3	
Tolu	per lb.	1 9 .. 1 11	1 9 .. 1 11	
BARKS—				
Canella alba	per cwt.	15 0 .. 28 0	15 0 .. 25 0	
Cascarilla	per lb.	25 0 .. 30 0	26 0 .. 37 0	
Peru, crown & grey ..	per lb.	0 11 .. 2 8	1 3 .. 2 8	
Calisaya, flat ..	per lb.	3 0 .. 4 0	3 4 .. 4 6	
quill ..	per lb.	3 3 .. 4 6	3 2 .. 4 3	
Carthage ..	per lb.	0 9 .. 2 0	0 10 .. 2 2	
Pitayo ..	per lb.	0 6 .. 2 2	0 4 .. 1 6	
Red ..	per lb.	1 10 .. 6 0	1 10 .. 6 0	
Buchu Leaves	per lb.	0 2 .. 0 9	0 3½ .. 1 0	
CAMPOR, China ..	per cwt.	72 6 .. 0 0	75 6 .. 77 6	
Japan ..	per lb.	80 0 .. 0 0	78 0 .. 80 0	
Refin Eng. ..	per lb.	1 2 .. 0 0	1 3½ .. 1 4	
CANTHARIDES	per lb.	7 0 .. 0 0	6 0 .. 6 6	
CHAMOMILE FLOWERS p. cwt.	per cwt.	40 0 .. 70 0	40 0 .. 50 0	
CASTOREUM	per lb.	7 0 .. 20 0	3 0 .. 30 0	
DRAGON'S BLOOD, lp. p. cwt.	per cwt.	110 0 .. 320 0	110 0 .. 220 0	
FRUITS AND SEEDS (see also Seeds and Spices)				
Anise, China Star pr cwt.	per cwt.	140 0 .. 150 0	107 6 .. 115 0	
Spanish, &c. ..	per lb.	35 0 .. 42 0	20 0 .. 38 0	
Beans, Tonquin ..	per lb.	1 9 .. 2 6	1 4 .. 1 3	
Cardamoms, Malabar				
good ..	per lb.	4 6 .. 6 3	6 0 .. 7 6	
inferior ..	per lb.	3 6 .. 4 5	4 0 .. 5 10	
Madras ..	per lb.	2 3 .. 5 0	2 6 .. 6 0	
Ceylon ..	per lb.	4 3 .. 4 6	4 5 .. 4 6	
Cassia Fistula ..	per cwt.	10 0 .. 20 0	11 0 .. 22 0	
Castor Seeds ..	per lb.	5 0 .. 10 0	5 0 .. 10 0	
Cocculus Indicus ..	per lb.	13 0 .. 17 0	12 0 .. 13 0	
Colocyath, applo. ..	per lb.	0 4 .. 0 9	0 3 .. 0 8	
Croton Seeds ..	per cwt.	45 0 .. 54 0	63 0 .. 67 0	
Cubebes	per lb.	22 0 .. 24 0	20 0 .. 30 0	
Cummin ..	per lb.	13 0 .. 30 0	22 0 .. 24 0	
Dividivi ..	per lb.	11 0 .. 15 0	12 0 .. 15 0	
Fennugreek ..	per lb.	12 0 .. 20 0	10 0 .. 11 0	
Guinea Grains ..	per lb.	25 0 .. 28 0	24 0 .. 25 0	
Juniper Berries ..	per lb.	9 0 .. 10 6	10 0 .. 10 6	
Nux Vomica ..	per lb.	8 3 .. 12 0	9 0 .. 13 0	
Tamarinds, East India ..	per lb.	5 0 .. 18 0	5 0 .. 20 0	
West India, new ..	per lb.	15 0 .. 26 0	20 0 .. 30 0	
Vanilla, large ..	per lb.	70 0 .. 83 0	58 0 .. 80 0	
inferior ..	per lb.	23 0 .. 68 0	22 0 .. 56 0	
Wormseed ..	per cwt.	0 6 .. 0 0	0 0 .. 0 0	
GINGER, Preserved, in bond				
(duty ¼d. per lb.) ..	per lb.	0 7 .. 0 10	0 7 .. 0 10	
GUMS (see separate list)				
HONEY, Chili	per cwt.	30 0 .. 43 6	28 0 .. 42 0	
Cuba ..	per lb.	0 0 .. 0 0	0 0 .. 0 0	
Jamaica ..	per lb.	30 0 .. 45 0	30 0 .. 50 0	
Australian ..	per lb.	28 0 .. 40 0	0 0 .. 0 0	
IPERACUANHA ..	per lb.	3 0 .. 3 6	3 0 .. 4 0	
ISINOLASS, Brazil ..	per lb.	3 3 .. 5 5	2 6 .. 4 6	
Tongue sort ..	per lb.	4 0 .. 5 6	3 4 .. 5 2	
East India ..	per lb.	2 6 .. 4 8	1 0 .. 4 6	
West India ..	per lb.	4 10 .. 5 4	4 0 .. 4 5	
Russ, long staple ..	per lb.	8 0 .. 12 6	8 0 .. 12 0	
inferior ..	per lb.	3 0 .. 7 6	3 6 .. 7 6	
Simovia ..	per lb.	2 6 .. 4 6	2 6 .. 4 6	
JALAP, good ..	per lb.	1 4 .. 1 5	1 3 .. 2 2	
infer. & stems ..	per lb.	0 10 .. 1 2	0 9 .. 1 4	
LEMON JUICE ..	per degree	0 2½ .. 0 0	0 0 .. 0 0	
LIQUORICE, Spanish ..	per cwt.	40 0 .. 80 0	0 0 .. 0 0	
Liquorice Root ..	per lb.	11 0 .. 18 0	0 0 .. 0 0	
MANNA, flaky ..	per lb.	2 6 .. 3 3	3 0 .. 3 3	
small ..	per lb.	1 4 .. 1 9	1 2 .. 1 8	
Musk, Pod	per oz.	22 0 .. 40 0	19 0 .. 39 6	
Grain ..	per lb.	50 0 .. 57 0	51 0 .. 57 0	
OILS (see also separate List)				
Almond, expressed ..	per lb.	1 0½ .. 0 0	1 1 .. 0 0	
Castor, 1st pale ..	per lb.	0 5½ .. 0 6	0 5½ .. 0 0	
second ..	per lb.	0 5½ .. 0 5½	0 4½ .. 0 5	
infer. & dark ..	per lb.	0 4½ .. 0 5	0 4½ .. 0 4½	
Bombay (in casks) ..	per lb.	0 4½ .. 0 5	0 4½ .. 0 4½	
Cod Liver	per gall.	3 6 .. 0 0	3 6 .. 6 0	
Croton	per oz.	0 8 .. 0 4	0 3 .. 0 4	
Essential Oils:				
Almond	per lb.	30 0 .. 0 0	35 0 .. 0 0	
Anise-seed ..	per lb.	10 8 .. 0 0	9 6 .. 9 9	
Bay	per cwt.	0 0 .. 0 0	65 0 .. 70 0	
Bergamot	per lb.	10 0 .. 18 0	8 0 .. 15 0	
Cajuput, (in bond) ..	per oz.	2 4 .. 2 5	0 0 .. 0 0	
Caraway	per lb.	5 6 .. 6 3	5 6 .. 6 3	
Cassia	per lb.	5 6 .. 5 9	0 10 .. 6 11	
Cinnamon ..	per oz.	1 0 .. 5 0	1 0 .. 7 0	
Cinnamon-leaf ..	per lb.	0 2½ .. 0 3	0 2 .. 0 5	
Citronello ..	per lb.	0 1½ .. 0 0	0 2½ .. 0 0	

1873.				1872.				1873.				1872.			
Essential Oils, continued:—								Oils, continued:—							
	s.	d.		s.	d.			£	s.			£	s.		
Clove.....per lb.	7	6	to 0 0	4	6	to 0 0		WHALE, South Sea, pale, portun	34	0	to 0 0	38	10	to 39 0	
Juniper.....	1	10	.. 2 0	1	3	.. 2 4		" yellow "	32	10	.. 33 0	38	0	.. 0 0	
Lavender.....	1	10	.. 5 6	2	6	.. 5 6		" brown "	30	0	.. 31 0	33	0	.. 34 0	
Lemon.....	14	0	.. 15 0	5	0	.. 15 0		East India, Fish	27	10	.. 0 0	27	10	.. 0 0	
Lemongrass.....per oz.	0	34	.. 0 0	0	5	.. 0 5½		OLIVE, Galipoli.....per ton	45	0	.. 46 0	46	10	.. 47 0	
Neroli.....	0	4	.. 0 6	0	5	.. 0 6		Trieste.....	44	10	.. 46 0	45	10	.. 46 0	
Nutmeg.....	0	84	.. 0 84	0	84	.. 0 9		Levant.....	42	0	.. 42 10	43	0	.. 44 0	
Orange.....per lb.	8	0	.. 11 0	7	0	.. 8 0		Megador.....	40	10	.. 0 0	12	10	.. 43 0	
Otto of Roses.....per oz.	13	0	.. 23 0	16	0	.. 39 0		Spanish.....	43	0	.. 43 10	45	0	.. 0 0	
Patchouli.....	3	9	.. 4 0	4	0	.. 0 0		Sicily.....	43	0	.. 0 0	45	0	.. 0 0	
Peppermint:								COCOANUT, Cochon.....	38	0	.. 0 0	36	0	.. 38 10	
American.....per lb.	17	0	.. 18 0	13	6	.. 14 6		Ceylon.....	32	10	.. 0 0	34	10	.. 35 0	
English.....	27	0	.. 34 0	26	0	.. 28 0		Sydney.....	28	0	.. 33 0	31	6	.. 35 10	
Rosemary.....	1	4	.. 1 10	1	11	.. 0 0		GROUND NUT AND GINCKLY:							
Sassafras.....	2	3	.. 3 6	3	2	.. 3 8		Bombay.....	0	0	.. 0 0	0	0	.. 0 0	
Spear-mint.....	6	0	.. 19 0	4	0	.. 16 0		Madras.....	35	10	.. 36 0	35	0	.. 0 0	
Thyme.....	1	10	.. 0 0	1	10	.. 1 11		PALM, fine.....	38	0	.. 0 0	39	10	.. 0 0	
Mace, expressed.....per oz.	0	2	.. 0 3	0	14	.. 0 3		LINSEED.....	30	0	.. 30 5	33	10	.. 0 0	
Opium, Turkey.....per lb.	24	0	.. 29 0	23	0	.. 24 0		RAPESEED, English, pale	34	10	.. 0 0	41	0	.. 0 0	
inferior.....	12	0	.. 20 0	12	0	.. 29 0		brown.....	32	0	.. 0 0	39	0	.. 0 0	
QUASSIA (bitter wood) per ton	70	6	.. 110 0	85	0	.. 90 0		Foreign pale.....	36	0	.. 0 0	41	10	.. 42 0	
RUBARB, China, good and								brown.....	0	0	.. 0 0	0	0	.. 0 0	
fine.....per lb.	2	5	.. 5 0	2	3	.. 0 0		COTTONSEED.....	28	15	.. 29 15	32	10	.. 32 10	
Good, mid. to ord.	0	7	.. 2 5	0	3	.. 2 0		LARD.....	43	10	.. 0 0	44	0	.. 45 0	
Dutch trimmed.....	0	0	.. 0 0	9	0	.. 9 6		TALLOW.....	29	0	.. 0 0	32	0	.. 0 0	
Russian.....	0	0	.. 0 0	0	0	.. 0 0		TURPENTINE, American, cks.	31	9	.. 0 0	40	0	.. 0 0	
ROOTS—Calumba.....per cwt.	10	0	.. 25 6	32	0	.. 35 0		French.....	0	0	.. 0 0	0	0	.. 0 0	
China.....	22	0	.. 24 0	23	0	.. 27 0		PETROLEUM, Crude.....	0	0	.. 0 0	0	0	.. 0 0	
Galangal.....	18	0	.. 26 0	16	0	.. 19 0		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
Gentian.....	18	0	.. 19 0	18	0	.. 20 0		refined, per gall.	1	14	.. 0 0	1	74	.. 0 0	
Hellebore.....	36	0	.. 33 0	30	0	.. 32 0		Spirit.....	1	0	.. 0 0	1	5	.. 0 0	
Orris.....	36	0	.. 80 0	30	0	.. 40 0		SEEDS.							
Pellitory.....	38	0	.. 39 0	38	0	.. 39 0		CANARY.....per qr.	48	0	.. 60 0	48	0	.. 52 0	
Pink.....per lb.	1	0	.. 1 3	0	9	.. 1 3		CARAWAY, English per cwt.	39	0	.. 44 0	37	0	.. 44 0	
Rhatany.....	0	0	.. 1 6	0	5	.. 0 11		German, &c.....	26	0	.. 36 0	29	0	.. 36 0	
Seneca.....	4	6	.. 5 0	4	0	.. 5 0		CORIANDER.....	9	0	.. 17 0	10	0	.. 20 0	
Snake.....	1	8	.. 1 0	1	1	.. 1 2		HEMP.....per qr.	40	0	.. 41 0	40	0	.. 44 0	
SAFFRON, Spanish.....	20	0	.. 25 0	27	0	.. 0 0		LINSEED, English per qr.	58	0	.. 61 0	0	0	.. 0 0	
SALEP.....per cwt.	170	0	.. 180 0	160	0	.. 180 0		Black Sea & Azof	59	0	.. 60 0	61	6	.. 62 0	
SARSAPARILLA, Lima per lb.	0	54	.. 0 7	0	74	.. 0 9		Calcutta.....	01	0	.. 0 0	66	0	.. 66 0	
Para.....	1	0	.. 1 3	1	3	.. 0 0		Bombay.....	63	6	.. 0 0	64	6	.. 0 0	
Honduras.....	1	0	.. 1 7	1	5	.. 1 8		St. Petersburg.....	56	0	.. 58 0	60	0	.. 60 6	
Jamaica.....	1	4	.. 2 4	1	6	.. 2 6		Mustard, brown, per bshl.	10	6	.. 15 6	13	0	.. 16 0	
SASSAFRAS.....per cwt.	14	0	.. 17 0	0	0	.. 0 0		white.....	8	6	.. 12 6	8	0	.. 9 0	
SCAMMONY, Virgin.....per lb.	25	0	.. 30 0	26	0	.. 30 0		PORRY, East India per qr.	65	0	.. 65 6	56	0	.. 0 0	
second & ordinary.....	9	0	.. 24 0	11	0	.. 25 0		SPICES.							
SENNA, Bombay.....	0	1	.. 0 5	6	1	.. 0 4		CASSIA LIONIA.....per cwt.	77	0	.. 81 0	87	0	.. 95 0	
Tinnivelly.....	0	0	.. 1 2	6	2	.. 1 0		Vera.....	27	6	.. 55 0	30	0	.. 60 0	
Alexandria.....	0	4	.. 1 10	0	24	.. 2 0		Buds.....	115	0	.. 120 0	117	6	.. 125 0	
SERAPICUM, refined.....	1	6	.. 0 0	1	6	.. 0 0		CINNAMON, Ceylon.							
American.....	1	2	.. 1 3	1	2	.. 1 3		1st quality.....per lb.	1	7	.. 3 6	2	8	.. 3 9	
SQUILLS.....	0	1	.. 0 3	0	1	.. 0 2		2nd do.....	1	4	.. 3 1	2	1	.. 3 4	
GUMS.								3rd do.....	1	0	.. 2 10	1	8	.. 2 11	
AMMONIAC drop.....per cwt.	65	0	.. 70 0	120	0	.. 260 0		Tellicherry.....	2	7	.. 3 0	2	9	.. 3 2	
lump.....	45	0	.. 65 0	60	0	.. 100 0		CLOVES, Penang.....	1	4	.. 0 0	1	4	.. 1 6	
ANIMI, fine washed.....	240	0	.. 270 0	284	0	.. 330 0		Amboyna.....	0	11	.. 0 0	6	64	.. 0 11	
bold scraped.....	200	0	.. 240 0	220	0	.. 280 0		Zanzibar.....	1	0	.. 0 0	0	7	.. 0 0	
sorts.....	120	0	.. 230 0	140	0	.. 230 0		GINGER, Jam, fine per cwt.	110	0	.. 252 0	100	0	.. 200 0	
dark.....	80	0	.. 110 0	90	0	.. 130 0		Ord. to good.....	64	0	.. 100 0	50	0	.. 90 0	
ARABIC, E. I., fine.....	60	0	.. 75 0	70	0	.. 84 0		Africa.....	50	0	.. 57 0	44	0	.. 45 0	
pale picked.....	70	0	.. 78 0	75	0	.. 81 0		Bengal.....	52	0	.. 53 0	39	0	.. 0 0	
sets, gd. to fin.....	40	0	.. 55 0	60	0	.. 69 0		Malabar.....	52	0	.. 54 0	0	0	.. 0 0	
garblings.....	20	0	.. 45 0	24	0	.. 59 0		Cochin.....	68	0	.. 120 0	45	0	.. 125 0	
TURKEY, pick. gd to fin.	150	0	.. 230 0	160	0	.. 230 0		Pecan, Blk, Malabar, per lb.	0	8	.. 0 84	0	7	.. 0 74	
second & inf.....	80	0	.. 140 0	85	0	.. 150 0		Singapore.....	0	74	.. 0 0	0	64	.. 0 0	
in sorts.....	50	0	.. 75 0	65	0	.. 80 0		White, Tellicherry.....	2	0	.. 0 0	0	0	.. 0 0	
Gedda.....	21	0	.. 35 0	30	0	.. 42 0		Cayenne.....	1	0	.. 2 0	1	6	.. 7 11	
BARBARY, white.....	30	0	.. 45 0	50	0	.. 55 0		MACE, 1st quality.....per lb.	3	0	.. 4 1	4	2	.. 4 8	
brown.....	26	0	.. 40 0	36	0	.. 44 0		2nd and inferior.....	2	11	.. 3 5	3	8	.. 4 1	
AUSTRALIAN.....	32	0	.. 48 0	22	0	.. 45 0		NUTMEG, 78 to 60 to lb.	3	3	.. 4 4	3	6	.. 4 3	
ASSAFETIDA, com. to gd.	30	0	.. 84 0	42	0	.. 105 0		90 to 80.....	3	1	.. 3 3	3	3	.. 3 5	
BENJAMIN, 1st qual.....	180	0	.. 500 0	180	0	.. 420 0		132 to 95.....	2	6	.. 3 0	2	8	.. 3 1	
2nd.....	150	0	.. 210 0	125	0	.. 200 0		PIMENTA.....	0	24	.. 0 3	0	3	.. 0 0	
3rd.....	70	0	.. 85 0	70	0	.. 85 0		VARIOUS PRODUCTS.							
COPAL, Angola red.....	120	0	.. 135 0	145	0	.. 147 6		COCHINEAL—							
Benguela.....	110	0	.. 115 0	110	0	.. 115 0		Honduras, black.....per lb.	2	3	.. 3 1	2	4	.. 3 3	
Sierra Leone.....per lb.	0	3	.. 0 10	0	34	.. 0 11		" silver.....	1	11	.. 2 5	2	2	.. 2 7	
Manilla.....per cwt.	13	0	.. 26 0	17	0	.. 39 0		" pasty.....	1	8	.. 1 10	2	0	.. 2 2	
DAMMAR, pale.....	45														